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ABSTRACT

The federal government has direct responsibility for the Bureau of Indian Affairs (BIA) and the Department of Defense (DOD) school systems. This report provides information on student academic performance, teacher staffing, access to educational technology, condition of facilities, and expenditure levels in BIA and DOD schools. Data included a mail survey of BIA and DOD schools; scores on achievement tests and college entrance exams; estimates of per-pupil expenditures, drawn from agency reports; and site visits to 16 BIA and DOD schools. In 1999-2000, the 171 BIA schools served about 47,000 American Indian students, less than 10 percent of all Indian students, in 23 states. Most schools were small; a third had a residential component; and 108 schools were operated by tribes under BIA grants or contracts. The 224 DOD schools served about 108,000 military dependents, mostly in the South, Europe, Japan, and Korea. Compared to students in public schools, BIA students scored far lower on standardized achievement tests and college entrance exams, while DOD students scored at or above national averages. At both types of schools, nearly all teachers were fully certified for their subjects or grade levels, but BIA schools reported difficulties in teacher recruitment. Access to computers and the Internet exceeded that of public schools in both types of schools, but BIA schools reported limited technical support. Many BIA schools reported problems with facilities. Appendices present the study's scope and methodology and agency comments. (SV)

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United States General Accounting Office

GAO

Report to Congressional Requesters

September 2001

# BIA AND DOD SCHOOLS

# Student Achievement and Other Characteristics Often Differ from Public Schools'

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# Contents


| | | |
|---|---|---|
| **Letter** | | 1 |
| | Results in Brief | 2 |
| | Background | 3 |
| | The BIA School System | 12 |
| | The DOD School System | 34 |
| | Agency Comments | 45 |
| **Appendix I** | **Scope and Methodology** | 47 |
| | Student Achievement | 48 |
| | Teacher Staffing and Educational Technology | 50 |
| | Facilities | 51 |
| | Estimated Per Pupil Expenditures | 53 |
| **Appendix II** | **Comments from the Department of Defense** | 56 |
| **Appendix III** | **Comments from the Department of the Interior** | 57 |
| | GAO Comments | 68 |
| **Appendix IV** | **GAO Contacts and Staff Acknowledgments** | 74 |
| | GAO Contacts | 74 |
| | Staff Acknowledgments | 74 |

**Tables**

| | |
|---|---|
| Table 1: Performance of Students in BIA and Public Schools on State Assessments in School Year 1999–2000 | 13 |
| Table 2: 1999–2000 BIA Graduates' Performance on SAT and ACT Compared With National Averages | 14 |
| Table 3: Technology Statistics for BIA and Public Schools | 20 |
| Table 4: Reported Facility Deficiencies for BIA Schools and Dormitories and Public Schools | 25 |
| Table 5: Selected Reported Deficiencies and Estimated Repair Costs for BIA Schools and Dormitories | 29 |
| Table 6: Comparison of Per-Pupil Expenditures at BIA and Public Schools, 1997–98 | 32 |
| Table 7: National Percentile Rankings for Students in DOD Schools on the TerraNova Multiple Assessments Standardized Tests for School Year 1999–2000 | 35 |

Table 8: Average SAT and ACT Scores for DOD and Public School Students Graduating in 2000 36
Table 9: Median Class Sizes at DOD Schools 38
Table 10: Technology Statistics for DOD and Public Schools 39
Table 11: Reported Facilities Deficiencies for DOD and Public Schools 42
Table 12: Selected Reported Deficiencies and Estimated Repair Costs for DOD Schools 44
Table 13: Comparison of Per-Pupil Expenditures at DOD and Public Schools, 1997–98 45

## Figures

Figure 1: Locations of BIA Schools in School Year 1999–2000 4
Figure 2: Locations of DOD Europe Area Schools in School Year 1999–2000 7
Figure 3: Locations of DOD Pacific Area Schools in School Year 1999–2000 8
Figure 4: Locations of DOD Domestic and Cuba Schools in School Year 1999–2000 9
Figure 5: Percentage of BIA Schools Reporting That a Majority of Teachers Received Various Types of Training 17
Figure 6: Percentage of BIA Schools Reporting That a Majority of Teachers Assign Students Computer or Internet Work at Least Once Per Week for Various Classroom Activities 22
Figure 7: Percentage of BIA Schools Reporting That Various Work Spaces and Equipment Are Insufficient 27
Figure 8: Percentage of DOD Schools Reporting That a Majority of Teachers Received Various Types of Training 37
Figure 9: Percentage of DOD Schools Reporting That a Majority of Teachers Assign Students Computer or Internet Work At Least Once Per Week for Various Classroom Activities 40
Figure 10: Percentage of DOD Schools Reporting That Various Work Spaces and Equipment Are Insufficient 43

## Abbreviations

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| ACT | American College Test |
| AIMS | Arizona Instrument to Measure Standards |
| AME | Applied Management Engineering, Inc. |
| BIA | Bureau of Indian Affairs |

| | |
|---|---|
| DOD | Department of Defense |
| DODEA | Department of Defense Education Activity |
| NAEP | National Assessment of Educational Progress |
| NCES | National Center for Education Statistics |
| NRC | National Research Council |
| OIEP | Office of Indian Education Programs |
| SAT | Scholastic Assessment Test |
| USDA | U.S. Department of Agriculture |

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**United States General Accounting Office**
**Washington, DC 20548**

September 28, 2001

The Honorable Robert C. Byrd
The Honorable Ben Nighthorse Campbell
The Honorable Byron L. Dorgan
The Honorable Daniel K. Inouye
United States Senate

The federal government has direct responsibility for two school systems serving elementary and secondary students—the Bureau of Indian Affairs (BIA) and the Department of Defense (DOD) school systems. Unlike public schools, where federal funding constitutes a small portion of total resources, the BIA and DOD school systems depend almost entirely on federal funds. Although the two school systems have this feature in common, their histories and settings are quite different. Because these school systems are a federal responsibility, the Congress is interested in ensuring that children attending BIA and DOD schools are receiving a quality education.

To better understand the quality of the educational environments in BIA and DOD schools, you asked us to provide information about several aspects of both school systems. Our study provides information on student academic performance, teacher staffing, access to educational technology, the condition of facilities, and expenditure levels for each system. This study also provides comparative data for public schools when these data were available.

The scope of our review included BIA day schools and boarding schools, and DOD schools located both in the United States and overseas. To the extent possible, we excluded from our analyses BIA peripheral dormitories on reservations—which house Indian students who attend nearby public schools—because they generally do not have academic programs. Information for this review was gathered primarily from agency data obtained from BIA and DOD, and from a mail survey of administrators at all BIA and DOD schools covering the 1999–2000 school year. Survey response rates were 81 percent and 92 percent for BIA and DOD schools, respectively. We also obtained data on student performance on achievement tests and college entrance examinations from states and college testing organizations for students in BIA schools. Data needed to precisely compute per-pupil expenditures for both BIA and DOD schools were not available. Therefore, our calculations are estimates based on BIA and DOD agency data and federal expenditure information from tribal

audit reports submitted under the Single Audit Act. We also conducted site visits to nine BIA schools located in South Dakota, Arizona, Minnesota, and Washington, and seven DOD schools located at three military installations in the United States—Maxwell Air Force Base, in Alabama; and Fort Benning and Robins Air Force Base, in Georgia. For further details about our scope and methodology, see appendix I. We did not verify information collected for this study but obtained supporting documentation where appropriate. We conducted our work between June 2000 and July 2001 in accordance with generally accepted government auditing standards.

## Results in Brief

The academic achievement of many BIA students as measured by their performance on standardized tests and other measures is far below the performance of students in public schools. BIA students also score considerably below national averages on college admission tests. Academic performance has been strongly associated with educational and income levels of parents, and students in BIA schools often come from family settings where education, employment, and earning levels are lower than the national average. BIA school administrators indicate that nearly all BIA teachers are fully certified for the subjects or grade levels they teach, although several officials said that some schools experience considerable difficulties recruiting and retaining qualified staff. In terms of educational technology, access levels to computers and the Internet reported by BIA school administrators exceeded those of public schools, but technical support to maintain computers and to assist teachers with using technology in the classroom was more limited than in public schools. Problems with school facilities were reported by many school administrators. For example, administrators at more than 60 percent of responding BIA schools reported having at least one building in inadequate condition compared with about a quarter of administrators at public schools surveyed by the Department of Education (Education) in 1999. Finally, our estimated per-pupil expenditures for BIA schools vary widely by school type (for example, day or boarding), but are generally higher than for public schools nationally. A number of factors distinguish BIA schools from public schools, which may add to their costs. For example, a high proportion of BIA students have special needs, and BIA schools support a broader infrastructure (such as sewer and water systems) than most public schools.

The academic achievement of DOD students, as measured by their performance on standardized tests and their plans for enrolling in college, generally exceeds that of elementary and secondary students nationwide.

On college admission tests, DOD students score at or near national averages. DOD school administrators indicated that nearly all their teachers are fully certified for the subjects or grade levels they teach, and about two-thirds have advanced degrees. Access levels to computers and the Internet reported by these administrators were better than public schools, and nearly all administrators reported that technical support is available in their school. Many DOD school administrators reported some problems with their school facilities, but overall the conditions of their buildings did not vary greatly from those reported by public schools in 1999. Our estimated per-pupil expenditures at DOD schools located overseas were higher than expenditures for those located in the U.S. DOD records show that a substantial part of the difference is related to moving and housing costs for teachers and staff in overseas schools. DOD's domestic schools, which generally do not have these expenses, are much closer to national per-pupil expenditures.

## Background

The BIA and DOD school systems are unlike public school systems in a number of ways and are also distinct from each other. Information on the schools, the students and families they serve, the settings in which they operate, and other fundamental aspects of these systems helps put our findings into context.

### BIA Schools

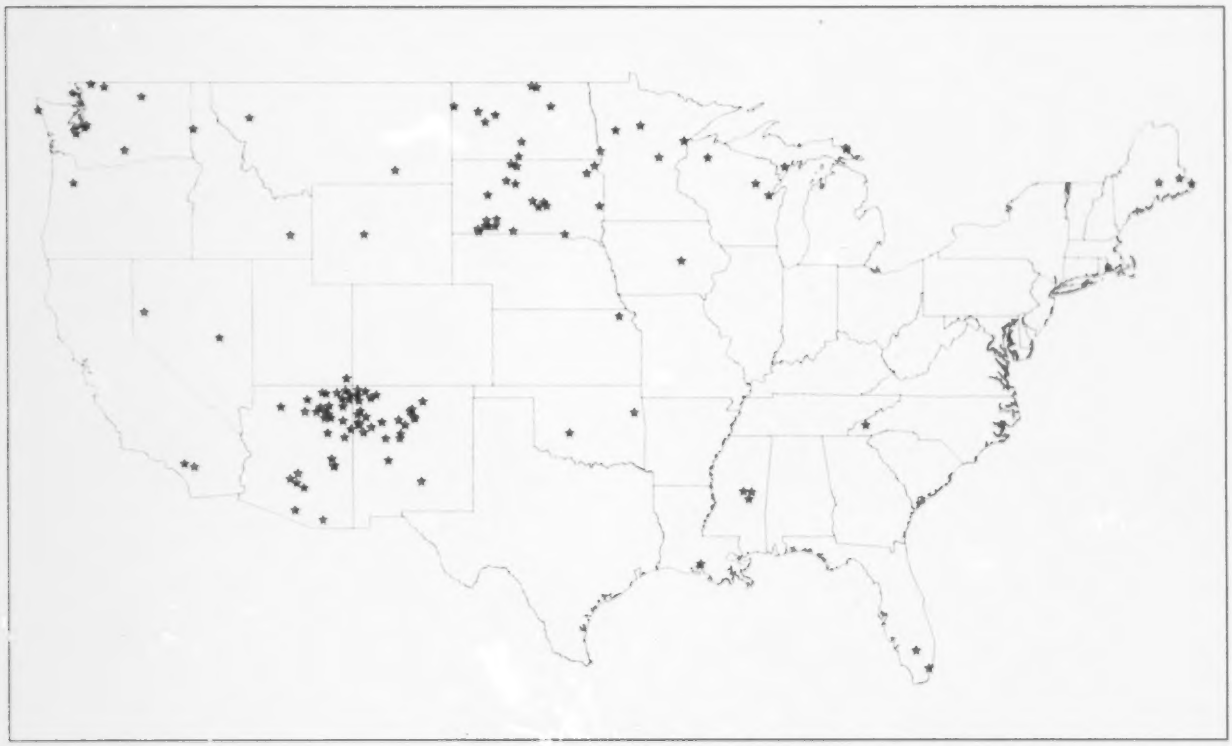
BIA schools serve less than 10 percent of all Indian students enrolled in elementary and secondary schools in this country.[1] In school year 1999–2000, the total enrollment was 47,080 students in the 171[2] schools funded by BIA. BIA schools are located in 23 states; however, over 70 percent of the schools are in four states—Arizona, New Mexico, North Dakota, and South Dakota (see fig. 1). The schools are located primarily in rural areas and small towns and serve Indian children living on or near reservations. Individual school enrollments range in size from 14 to over 1,000 students, but a little over half of the schools enroll fewer than 250 students; most are combined schools spanning both elementary and secondary grades. A

[1]According to the National Center for Education Statistics (NCES), approximately 541,000 American Indian/Alaska Native children were enrolled in public elementary and secondary schools in the 50 states and the District of Columbia in school year 1999–2000.

[2] In addition, BIA supports 14 peripheral dormitories which served 1,689 children in school year 1999-2000. Two of the 14 peripheral dormitories offered kindergarten-only programs in school year 1999-2000. We considered peripheral dormitories to be outside the scope of this report and excluded them from our analyses where possible.

unique feature of the BIA school system is that almost one-third of the schools have a residential component; that is, they board at least a portion of the students who attend the school. In total, about 17 percent of BIA students reside in school dormitories. Some students board because their homes are so far away or inaccessible that daily transportation is impractical. However, an increasing proportion of students reside in the dormitories for other reasons; for example, some students live in boarding schools to separate them from dysfunctional or severely impoverished home environments.

**Figure 1: Locations of BIA Schools in School Year 1999–2000**



Source: Data are from BIA's Office of Indian Education Programs. School locations are indicated by stars, but some stars represent more than one school.

Education programs and activities of BIA schools are administered by the BIA's Office of Indian Education Programs (OIEP); however, in general, the organization of BIA schools is highly decentralized. Each school is

governed by its own independent school board, which has authority over functions such as hiring personnel, adopting budgets, and setting policy. Another important aspect of the BIA school system is the agency's support and encouragement of tribal control of school programs. In school year 1999–2000, 108 schools, or about two-thirds of all BIA-funded schools, were operated by tribes or tribal organizations under grants, contracts, or compacts with BIA; the remainder were operated by BIA.

In fiscal year 2001, BIA received a total of $777.6 million to support the operations of its schools and address educational facility needs.[3] This represented a substantial (30 percent) increase over fiscal year 2000 funding levels. Nearly all of the increase was for repair or replacement of school facilities; funding for school operations increased only moderately.[4] Like many public schools, BIA schools also receive funding from Education programs, such as Title I and Safe and Drug Free Schools and Communities. Funds from these programs are provided to BIA and passed through to schools.[5] Fiscal year 2000 funding from Education programs totaled $132 million. BIA schools also participate in the U.S. Department of Agriculture's (USDA) child nutrition programs, such as the National School Lunch and Breakfast programs, which provide free or reduced-price meals for children living in families earning below certain income levels.

## DOD Schools

DOD operates schools for the children of military and civilian DOD personnel overseas and on certain military bases in the United States.[6] In total, DOD operated 224 elementary and secondary schools in school year 1999–2000, with an enrollment of almost 108,000 students. A little over

[3]Funding for BIA schools comes primarily from two BIA appropriations: Operation of Indian Programs and Construction.

[4]Funding for school facilities repair and replacement—which comprises a smaller portion of BIA's education budget—increased by 121 percent. Funding for school operations, the majority of the budget, increased by about 5 percent. Taken together these increases in fiscal year 2001 raised funding 30 percent over the previous year.

[5]Under an agreement with Education, BIA receives flow through funds for several Education programs and is permitted to retain 1.5 percent of these funds to perform administrative responsibilities similar to those performed by state education agencies.

[6]The schools are organized into two separate but parallel systems: Department of Defense Dependents Schools overseas, and the Department of Defense Domestic Dependent Elementary and Secondary Schools in the United States. We refer to schools in both systems as DOD schools.

two-thirds of DOD schools are located overseas, concentrated in several countries in Europe and in Japan, Korea, and Cuba (see figs. 2 and 3). About 74,280 students were enrolled in DOD overseas schools in school year 1999–2000.[7] The domestic schools are located on military bases in seven states concentrated in the Southeast and in Guam and Puerto Rico (see fig. 4) and enrolled about 33,690 students in school year 1999–2000.[8] Individual school enrollments range in size from 32 to over 1,300 in the two DOD systems, with the median school size being about 450 students. According to a DOD official, nearly all eligible children of military parents overseas attend DOD schools. However, most children of military parents in the U.S. attend public schools. DOD officials estimate that about 15 percent of school age military dependents in total attend DOD schools abroad and in the United States.

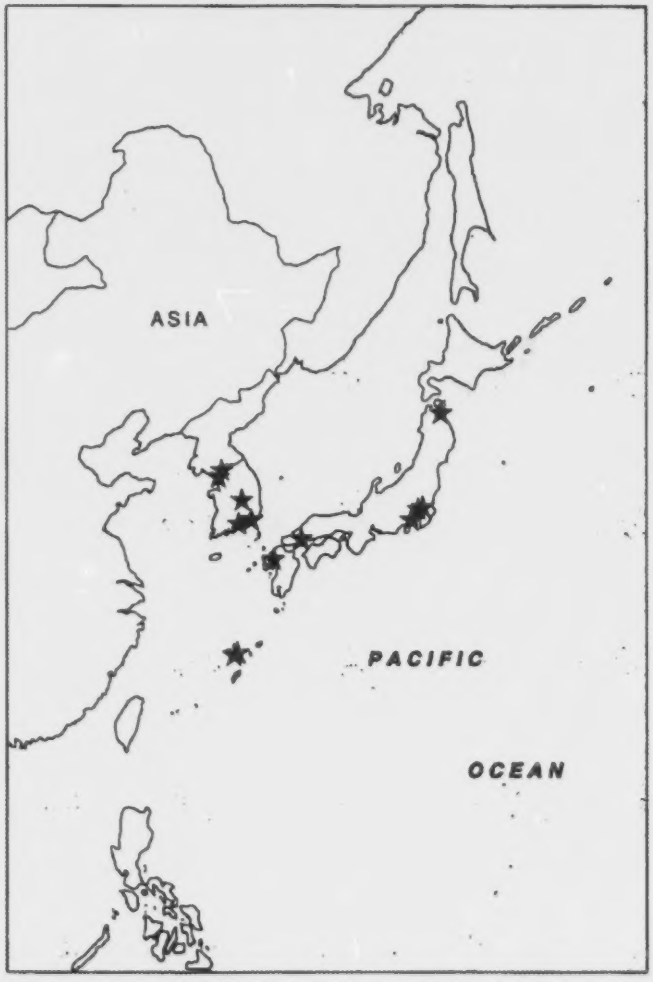
[7]In addition, DOD pays tuition for about 2,080 eligible students overseas to attend non-DOD schools in countries where no DOD schools are available.

[8]In addition, DOD pays tuition and/or transportation costs for approximately 2,085 DOD students enrolled in public schools operated by the local education agency in four states.

**Figure 2: Locations of DOD Europe Area Schools in School Year 1999–2000**

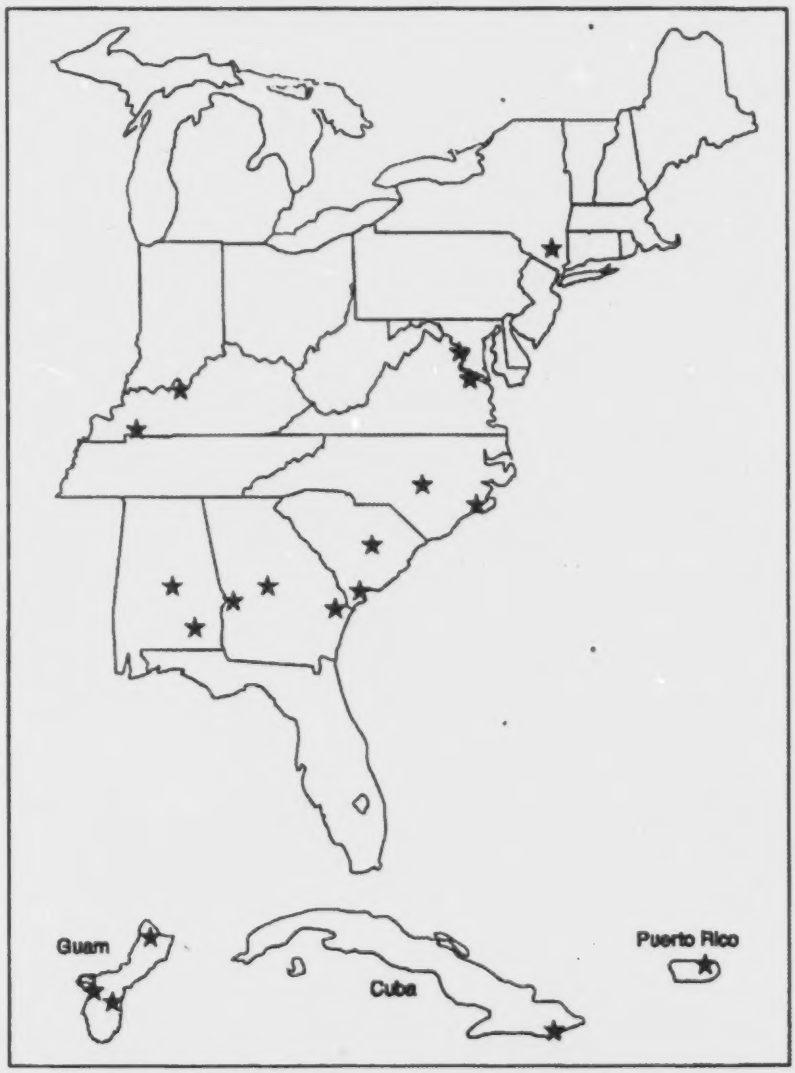
Source: Data are from *DODEA 1999–2000 Accountability Report.* (Arlington, Va.: Department of Defense Education Activity (DODEA)). Some locations may have more than one school.

Figure 3: Locations of DOD Pacific Area Schools in School Year 1999–2000




Source: Data are from *DODEA 1999–2000 Accountability Report*. Some locations may have more than one school.

Figure 4: Locations of DOD Domestic and Cuba Schools in School Year 1999–2000




Source: Data are from *DODEA 1999–2000 Accountability Report.* Some locations may have more than one school.

Education programs and activities of DOD schools are managed and directed by the Department of Defense Education Activity (DODEA). The overseas and domestic schools are organized into 24 districts, each managed by a superintendent and other district staff, such as curriculum coordinators and maintenance supervisors.

In fiscal year 2001, DOD schools received a total of $1.3 billion to support school operations and address facility needs.[9] Overall, this represented level funding since fiscal year 2000, although funding for school operations and maintenance rose slightly while funding for school construction decreased. DOD schools are not authorized to receive grants from federal programs, including those administered by Education; however, DOD schools do participate in the USDA child nutrition programs.

## Characteristics of BIA and DOD Students and Their Families Differ

While the federal government has responsibility for both the BIA and DOD school systems, the two systems are very distinct from each other, particularly with respect to the types of students and families they serve. The proportion of students who have special needs is much higher in BIA schools than DOD schools. For example, according to agency records, about 1 in every 5 BIA students is enrolled in special education, compared with 1 in every 12 DOD students; and nearly 60 percent of BIA students have limited English proficiency compared with just 6 percent of DOD students. Students in the two systems also differ in terms of their economic need. Eligibility for the USDA's free or reduced-price lunch programs is often used as an indicator of poverty. While data on the proportion of children eligible for free or reduced-price lunch were not complete for BIA schools, available data for 123 of the 171 schools showed that over 80 percent of students were eligible, compared with about one-third of students at DOD schools.

Specific information on the education levels and employment status of parents of BIA and DOD students was not available, but other information suggests significant differences between the two. For example, unemployment on or near Indian reservations is very high—over 40 percent in 1999. In contrast, students attending DOD schools are generally military dependents and, by virtue of that fact, have at least one parent

[9]Funding for DOD schools comes from Military Construction Appropriations, Defense-Wide; and Defense Appropriations—Operations and Maintenance, Defense-Wide, and Procurement, Defense-Wide.

who is employed. With respect to education, about one-third of Indian adults do not have high school diplomas, according to Census Bureau data for 1990; in contrast, nearly all DOD active military personnel have completed high school. Moreover, a number of factors can affect parental involvement in BIA schools, including long distances between home and school, language barriers, and parents' poor associations with schools due to past federal policies emphasizing the assimilation of Indian children. In comparison, military communities have a tradition of supporting military families, and this support extends to their schools. Parental involvement is highly emphasized in DOD schools, with some base commands providing release time to military personnel to volunteer in schools.

## Need for BIA and DOD Schools

At various times, the Congress has considered the question of whether there is a need for BIA and DOD schools in locations where public school systems are close by. Since 1794, when the first treaty providing for any form of Indian education was signed, the federal government has provided education services for Indian children, and has carried it out almost exclusively through the BIA. However, in the 20th century, the states began providing for Indian education and currently provide schooling for the majority of Indian elementary and secondary students. During the latter part of the 1970s, the Congress reviewed the need to construct certain BIA schools close to public schools to determine if BIA was properly ranking schools on its school construction list. Though Indian families can choose where to send their children to school, BIA's policy at that time was to have children attend nearby public schools with adequate facilities instead of building new BIA schools to serve these students. However, in 1988, the Congress decided that proximity to a public school could not be the primary reason for rejecting a BIA school construction project.

The need for DOD domestic schools also has been reviewed a number of times, specifically to determine whether transferring schools to nearby public school districts is feasible. DOD domestic schools were established to provide education to military children in communities where the local schools were deemed unable to provide a suitable education. After 1950, schools were added to the system to allow military children to attend integrated schools in locations where local schools remained segregated. Since that time, however, more and more schools have been transferred to public school districts, in part because of the integration of public schools and Education's emphasis on state and local responsibility for the education of military children. Thus, while at one time there were about 100 installations with DOD-operated schools, now there are 14 located in

the 50 states. According to a DOD official, most children of military parents in the U.S. attend public schools.

## The BIA School System

The academic achievement of many BIA students falls far below that of public school students. As in most public schools, nearly all BIA teachers are certified and class sizes in BIA schools are smaller than national averages, even though officials report some difficulty recruiting staff. BIA students have greater access to computers and Internet connections than public school students generally, though a smaller proportion of BIA schools than public schools has technology support staff to maintain equipment and assist teachers in integrating technology into classrooms. BIA administrators report extensive facilities problems and agency records show a deferred maintenance and repair backlog approaching $1 billion. Estimated per-pupil expenditures vary widely among different types of BIA schools, such as boarding schools and day schools, and are higher than per-pupil expenditures at public schools. It is difficult to draw conclusions about differences in expenditure levels between BIA and public schools, in part because of cost factors that affect some BIA schools, such as higher proportions of students who have special needs, broader infrastructure responsibilities, longer distances to transport children, and the cost of residential programs in boarding schools.

### Academic Performance of Many BIA Students is Below That of Public School Students

In school year 1999–2000, BIA students scored far below public school students on state assessments in North Dakota, South Dakota, and Arizona—three states with large numbers of BIA schools.[10] As shown in table 1, the average national percentile rankings for BIA students on North Dakota's statewide assessment, for all grades and subject areas tested, ranged from the 25th to the 33rd percentiles in school year 1999–2000. (By definition, the national average on the norm-referenced tests used in North Dakota and South Dakota is the 50th percentile.) The corresponding averages for public school students in North Dakota ranged between the 64th and 71st percentiles. Similarly, in South Dakota, the average national percentile rankings for BIA students on South Dakota's statewide assessment were much lower than the averages for public school students

[10]We were able to obtain data for all BIA schools in North Dakota and South Dakota and for 19 of the 50 BIA schools in Arizona that participated in the state's assessment program. About 36 percent of all BIA students attend the schools to which our data relate. Data were not available for BIA schools in New Mexico, which has about one-quarter of all BIA students.

in the state, both overall and for specific skill areas such as language arts, reading, and math. Finally, in Arizona, a smaller proportion of BIA students met state standards than public school students. In school year 1999–2000, in reading, writing, and math, at each grade level tested, the proportion of BIA students who met or exceeded the standards was far lower than the proportion of public school students. (See table 1.)

**Table 1: Performance of Students in BIA and Public Schools on State Assessments in School Year 1999–2000**

| | Average performance of BIA students | Average performance of public school students |
|---|---|---|
| North Dakota[a] | 25th–33rd percentile | 64th–71st percentile |
| South Dakota[b] | 25th–28th percentile | 60th–67th percentile |
| Arizona[c] | 0–27 percent met or exceeded standards | 15–71 percent met or exceeded standards |

Note: The table shows the range of scores on these assessments for all grade levels and subject areas tested.

[a]North Dakota uses the TerraNova Basic Multiple Assessments as an assessment tool at grade 4, and the TerraNova Complete Battery Plus at grades 6, 8, and 10. Scores shown are total scores.

[b]South Dakota uses the Stanford Achievement Test as an assessment tool at grades 2, 4, 8, and 11. Scores shown are for the complete battery.

[c]Arizona uses an assessment test called the Arizona Instrument to Measure Standards (AIMS) in grades 3, 5, 8, 10, and 11. AIMS classifies students into four categories in relation to the standards—Falls Far Below, Approaches, Meets, or Exceeds.

For Arizona and North Dakota, data for public school students by ethnicity were available. These data indicate that Indian students in public schools in these two states score below state averages but higher than BIA students in those states.

In addition to standardized testing, BIA schools assess students' proficiency in language arts and math using a combination of other measures including "authentic assessment." Authentic assessment involves evaluating student achievement based on a review of multiple items such as portfolios illustrating students' work, grades, and work samples as well as teacher observations. Many school districts and states have been incorporating aspects of authentic assessment into their student assessment programs. Authentic assessment often requires students to demonstrate problem-solving skills and is thought to reflect real-world situations. Some researchers consider authentic assessment more appropriate for minority students than standardized testing because standardized tests have been criticized as being culturally biased. In particular, because of the diversity of languages and cultures among

Indian students, some educators have found these authentic assessment methods more useful. These assessments are reported annually by all BIA-funded schools. Using authentic assessment approaches, about half of BIA students have been assessed as proficient or advanced, in both math and language arts, each year over the last 3 years.

Other measures often used as indicators of students' academic success include dropout rate, college admissions test scores, and the proportion of students planning to attend college. On these measures, BIA students perform less well than public school students. For example, in their annual reports, BIA high schools report dropout rates—the proportion of high school students who leave school and do not enroll in another school during the year—averaging about 10 percent. This is higher than the national average dropout rate (about 5 percent) and slightly higher than dropout rates for other ethnic minority groups. In addition, BIA students score significantly below national averages on college admission tests. As shown in table 2, BIA students who take the Scholastic Assessment Test (SAT) and the American College Test (ACT)—two widely used college entrance examinations—score below students nationally in both verbal/English and math assessments. They also score below students from low-income families on these tests. Finally, in our survey, BIA school officials estimated that about 28 percent of their graduates planned on enrolling in college after graduation, about evenly split between 4-year and 2-year colleges. Nationally, in 1999, a little less than two-thirds of high school graduates were enrolled in college the year after they completed high school—about 40 percent in 4-year colleges and 24 percent in 2-year colleges. For students from low-income families, the percentage who were enrolled in college the year after they graduated was around 50 percent.

**Table 2: 1999–2000 BIA Graduates' Performance on SAT and ACT Compared With National Averages**

| | SAT scores[a] | | ACT scores[b] | |
|---|---|---|---|---|
| | Verbal | Math | English | Math |
| BIA students | 383 | 382 | 14.7 | 15.9 |
| National average | 505 | 514 | 20.5 | 20.7 |

Note: A small number of BIA seniors (fewer than 70) take the SAT. Far more BIA students (about 800) take the ACT because BIA schools are located in areas of the country where the ACT is the predominant college admission test.

[a]Data provided by the College Board.

[b]Data provided by the American College Testing Service.

While the academic achievement of BIA students is low relative to students nationally, to some extent the performance of BIA students may be associated with conditions that are beyond a school system's control. Higher student outcomes have been strongly associated with higher educational and income levels of parents. BIA students come from environments where family education levels are low and unemployment and poverty rates are high. For example, 1990 Census Bureau data show that one-third of Indians age 25 or older do not have high school diplomas compared with one-quarter of all adults nationally; and for Indians living on reservations or trust lands, the proportion of adults who are not high school graduates is over 45 percent. Indians living on or near reservations also experience high rates of unemployment. Data from BIA's Indian Labor Force Report show that 43 percent of the potential labor force living on or near reservations remained unemployed in 1999. Poverty rates are also high among Indian families, with 27 percent having incomes below the poverty level, compared with 10 percent of all families. Other data suggest that the proportion of families with incomes below the poverty level is even higher for those living on reservations and trust lands. Finally, the issue of alcohol and substance abuse is significant for Indian communities; the death rate due to alcoholism is about 7 times higher for Indians than for all races. Parental substance abuse has been identified as an environmental risk factor associated with learning problems, learning disabilities, and developmental delays in children. In a previous Education survey, almost 60 percent of BIA teachers considered parental alcohol or drug abuse a serious problem in their schools, compared with about 13 percent of teachers in public schools with low Indian student enrollment.[11]

BIA officials noted that the agency has developed programs to begin to moderate the influences of economic and family conditions on students' academic performance. These include early childhood and family literacy programs as well as a therapeutic residential model aimed at achieving positive changes in attitude, behavior, and the academic performance of students attending boarding schools. In addition, in its Annual Performance Plan, BIA has established several goals that address student academic performance. These goals concern student proficiency in language arts and math, student attendance, teacher proficiency in new assessments and technology, school accreditation, and number of degrees

[11]NCES, *Characteristics of American Indian and Alaska Native Education: Results From the 1990–91 and 1993–94 Schools and Staffing Surveys*, NCES 97-451 (Washington D.C.: U.S. Department of Education, March 1997).

conferred on Indian students at tribally controlled community colleges and at BIA's two post-secondary schools.[12]

## Teacher Staffing at BIA Schools Is Comparable to That of Public Schools Despite Some Recruiting Difficulties

According to the National Center for Education Statistics (NCES), one of the major elements that characterizes teacher quality is teacher preparation and qualifications. This refers to certification, education, and continuing learning. Results from our survey indicate that nearly all teachers in BIA schools were certified in school year 1999–2000. Typically, about 95 percent of teachers in BIA schools were fully certified in the subjects or grades they taught and another 3 percent had temporary or provisional certification. About 92 to 93 percent of public school teachers in general were fully certified in the subjects they taught.[13] Teachers in BIA-operated schools were slightly more likely to be fully certified than teachers in tribally operated schools. In addition to certification, teachers are being encouraged to pursue advanced degrees in order to gain a more advanced understanding of their discipline. About one-fourth of teachers in BIA schools had advanced degrees, compared to about 46 percent of public school teachers generally.[14] The proportion of teachers with advanced degrees in BIA-operated schools was about 33 percent, while in tribally operated schools it was about 21 percent.

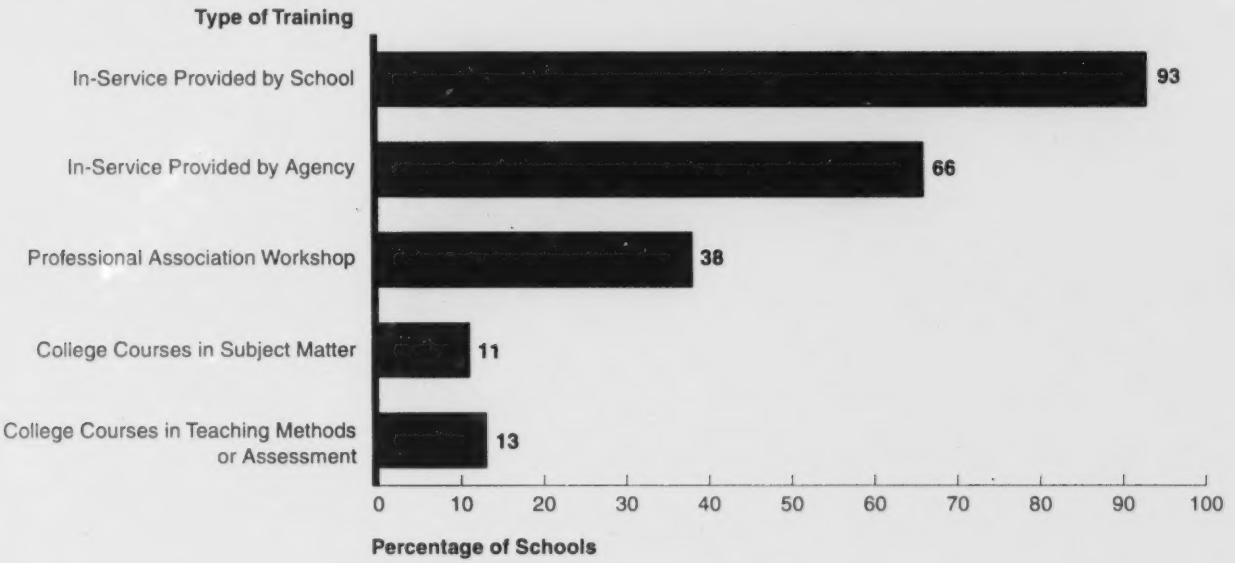
BIA teachers have access to various kinds of professional development and BIA schools support professional development in several ways. For example, 93 percent of the BIA schools that responded to our survey reported that the majority of their teachers received in-service training provided by the school during the 1999–2000 school year. Other types of training widely used included in-service training provided by the agency and workshops provided by professional associations, as shown in figure 5.

[12] BIA receives funds for two post-secondary schools: Haskell Indian Nations University and the Southwestern Indian Polytechnic Institute.

[13] 1998 data as reported in *The Condition of Education 2000*, Table 47-3, NCES (Washington, D.C.: U.S. Department of Education, June 2000).

[14] 1998 data from Fast Response Survey System as reported in *The Condition of Education 2000*, Table 47-1, NCES (Washington, D.C.: U.S. Department of Education, June 2000).

**Figure 5: Percentage of BIA Schools Reporting That a Majority of Teachers Received Various Types of Training**




Source: GAO survey.

BIA schools facilitate their teachers' professional development in a variety of ways. The following supports were each reported by nine out of ten survey respondents: permitting time off to participate in training, setting days aside for training, paying travel or per diem for training, and paying tuition or fees. Such training and supports for professional development are comparable to the situation for public school teachers generally, nearly all of whom report having some professional development in the previous year with similar kinds of support from their schools.[15]

While nearly all teachers at BIA schools were certified, officials at some schools we visited, particularly tribally operated schools, recounted some difficulties recruiting and retaining qualified staff. At one tribally operated school in Washington, the chief school administrator said it was difficult to attract teachers because the school could not compete with

[15]NCES, *Schools and Staffing Survey, 1993–94*, a national sample survey (Washington, D.C.: U.S. Department of Education).

compensation packages offered by nearby urban districts.[16] The 2000–2001 school year was the first year the school was able to pay teachers at the state salary scale, but the school offered limited retirement benefits. As a result, the administrator said the school tended to attract beginning teachers or retired teachers who had pensions from their public school careers. Other officials noted that the remote locations of some schools hinder recruiting. Many BIA schools are located in settings with few amenities to attract teachers and other staff. For example, at one school we visited in Arizona, the closest town offering major shopping and banking services was 96 miles away, and the principal said the community's isolation and lack of amenities contributed to teacher turnover. In many locations, basic housing is not even available for staff to purchase or rent, so BIA has constructed employee quarters for which staff pay rent. About one-third of all BIA schools and 45 percent of tribally operated schools had teacher turnover rates of 25 percent or higher in school year 1999–2000; the average turnover rate was 18 percent. Nationwide, about 87 percent of full-time public school teachers remain at the same school from one year to the next, implying a turnover rate of about 13 percent.[17]

A teacher's ability to effect student learning may be influenced by the number of students in the classroom, and various studies have associated smaller class sizes with higher student achievement. Class sizes reported by BIA administrators are generally smaller than national averages, with tribally operated schools reporting smaller classes than BIA-operated schools. Nationally, in 1998 the average class size for general elementary classrooms was 23 students and in departmentalized settings (those in which a teacher's main assignment is in one particular subject area, such as English or social studies) it was 24 students.[18] The median number of students per classroom reported by BIA-operated schools was about 20 to 22 in grades K through 8 and about 17 in grades 9 through 12. Tribally operated schools had about 17 to 18 students per classroom in grades K

[16]BIA-operated schools use a uniform salary schedule comparable to the salary schedule used by the Department of Defense. This was implemented in part in an effort to recruit and retain quality staff. However, tribally operated schools determine salaries independently and there are no summary data available about their teachers' salaries.

[17]NCES, *Schools and Staffing Survey, 1993–94* and *Teacher Follow-up Survey, 1994–95* (Washington, D.C.: U.S. Department of Education).

[18]NCES, *Teacher Quality: A Report on the Preparation and Qualifications of Public School Teachers*, NCES 1999-080 (Washington, D.C.: U.S. Department of Education, Jan. 1999). Departmentalized settings are most often at the secondary level.

through 6 and about 16 students per classroom in grades 7 through 12. Our survey did not ask specifically about multiple grades in a classroom. However, some BIA schools are very small and have fewer full-time teachers than grade levels taught in the school. For example, there are five BIA schools with 51 or fewer students in grades ranging from K to 6 and K to 12. Four of these five schools have fewer full-time teachers than the number of grades in the school, suggesting that multiple grades are being taught in some classrooms.

## Access to Computers and the Internet Reported by BIA Schools Is Greater Than Public Schools, but Technology Support Is More Limited

BIA schools appear to be in step with schools around the country in making technology available as an integral tool for learning. Based on our survey results, BIA students have greater access to computers than public school students nationwide. BIA administrators reported having about 1 instructional computer for every 3.5 students overall, although access levels varied somewhat from school to school, ranging from 1 computer for every student to 1 computer for every 18 students. In comparison, the national average for public schools is 1 computer for every 5 students, as reported by NCES for 2000.[19] A major goal set by Education is that schools have 1 modern multimedia computer for every 5 students.[20] We do not know about the quality or capacity of the computers in BIA or public schools, but 46 percent of the computers in BIA schools were reported to be 3 years old or older.

In some respects BIA schools provide their students with greater access to the Internet than public schools. According to a BIA official, all 171 BIA schools are connected to the Internet. Nationally, nearly all public schools now have Internet access. However, BIA school officials reported that 1 computer with Internet access was available for every 4.3 students, a ratio appreciably better than the 1 to 7 ratio for public schools nationwide. Some policymakers have stressed the importance of not only connecting every school to the Internet but eventually connecting every classroom. A little over 80 percent of BIA instructional rooms have at least one computer with a connection to the Internet. This number is also slightly above the national average for public schools. However, as with some public schools, some BIA schools still use the lowest-speed connections

[19]NCES, *Internet Access in U.S. Public Schools and Classrooms: 1994–2000*, NCES 2001-071 (Washington, DC: U.S. Department of Education, May 2001).

[20]U.S. Department of Education, *1999 Performance Report and 2001 Annual Plan* (Washington, D.C.: 2000).

for their primary connection to the Internet, and thus cannot access complex computer applications and resources. Table 3 summarizes the information on students' access to technology at BIA schools based on our survey and for public schools nationally.

**Table 3: Technology Statistics for BIA and Public Schools**

| | BIA schools[a] | Public schools[b] |
|---|---|---|
| Number of students per instructional computer | 3.5 | 5 |
| Number of students per instructional computer with Internet access | 4.3 | 7 |
| Percentage of schools connected to the Internet | 100 | 98 |
| Percentage of instructional rooms with Internet access | 81 | 77 |
| Percentage of schools using dial-up connections to the Internet[c] | 10 | 11 |

[a]Data for BIA schools come from GAO's survey, with the exception of the percentage of schools connected to the Internet, which was provided by a BIA official. Data represent technology access in BIA schools at the time of our survey, which was administered in Nov. 2000.

[b]Public school data are for school year 1999–2000 and come from NCES' *Internet Access in U.S. Public Schools and Classrooms: 1994–2000*, NCES 2001–071 (Washington, D.C.: U.S. Department of Education, May 2001).

[c]Other types of connections schools may be using include dedicated line, cable modem, and wireless connection.

While computers and the Internet are generally available at BIA schools, a smaller proportion of the schools have paid (versus volunteer) technology support staff than public schools. In a survey conducted by Education, nearly all (95 percent) of public schools reported having some paid staff, either full- or part-time, to support advanced telecommunications (for example, networked computers and computer hardware and software) in their school in 1999. In our survey, we asked whether schools had (1) staff who provided technical support or performed maintenance on computers and (2) staff who assisted teachers in using computer software or the Internet to instruct students. The results indicated that more than one-quarter of BIA schools did not have paid technical support and about one-third did not have paid staff to help teachers use computers for instruction in 2000. Evidence suggests that technology support of this kind has a positive impact on teacher use of technology in the classroom.[21] According to an NCES report, research in general shows that public school teachers

[21]A. Ronnkvist, S. Dexter, and R. Anderson, *Technology Support: Its Depth, Breadth, and Impact in America's Schools, Teaching, Learning and Computing: 1998 National Survey* (Irvine, Calif.: June 2000).

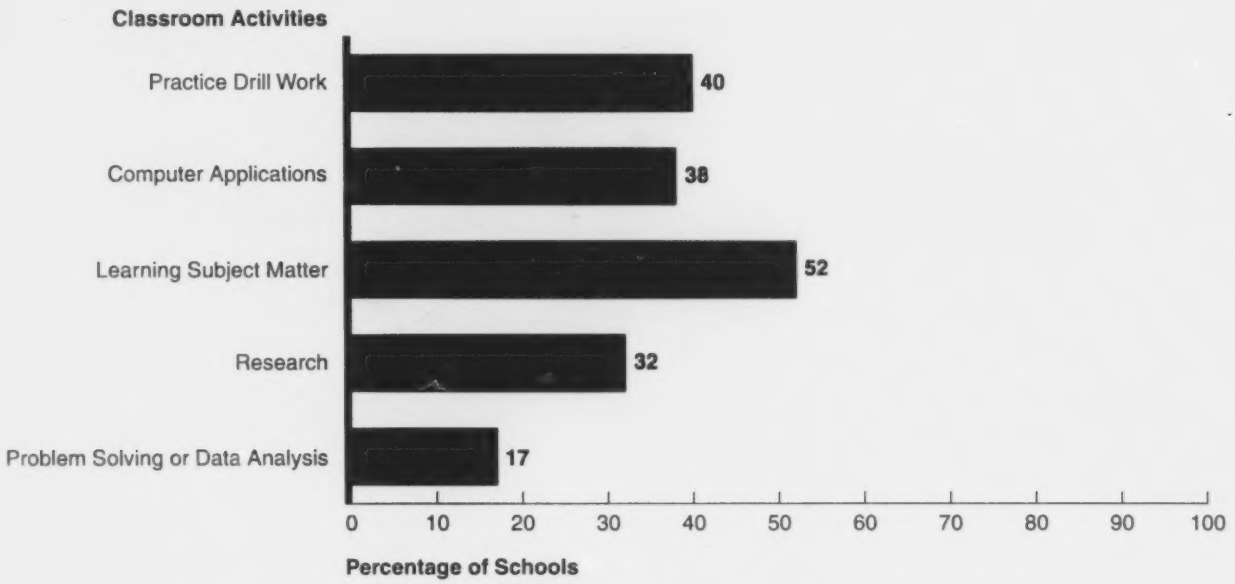
view the lack of technology support for integrating telecommunications into the classroom and the lack of technical assistance in schools to be obstacles to their effective use of technology.[22] Our survey results show that these areas of support are not available in many BIA schools. One reason why technology staff is more limited in BIA schools, according to one BIA official, is that the high turnover rate for technology coordinators is a problem throughout the BIA school system. He indicated that these technology coordinators often receive training for the work and then leave the schools for higher-paying positions.

BIA school administrators reported that their computers are used regularly for learning activities. Although there is evidence to suggest that the effective use of technology in the classroom can improve student learning, the research on what types of classroom activities are best served by technology applications is not conclusive.[23] Nonetheless, studies on the uses of technology in schools tend to distinguish more basic uses of computers—such as for drill and practice, which the research shows can be effective for learning—from more pedagogically complex uses of computers—such as using the Internet in small groups for class projects, where the research data are less extensive. In our survey, we asked school administrators to estimate the portion of their teachers who routinely engaged their students in the use of computers for certain activities. As shown in figure 6, many of the teachers at BIA schools regularly engage students in the use of computers for practice drills and for learning subject matter. Fewer BIA teachers are using them on a regular basis for student research or to develop student skills in problem solving.

[22]NCES, *Teachers' Tools for the 21st Century, A Report on Teachers' Use of Technology*, NCES 2000-102 (Washington, D.C.: U.S. Department of Education, Sept. 2000).

[23]H. Wenglinsky, *Does It Compute? The Relationship Between Educational Technology and Student Achievement in Mathematics* (Princeton, N.J.: Educational Testing Service, Sept. 1998).

**Figure 6: Percentage of BIA Schools Reporting That a Majority of Teachers Assign Students Computer or Internet Work at Least Once Per Week for Various Classroom Activities**




Source: GAO survey.

BIA schools appear to be making substantial investments in school technology. Administrators reported to us that in 1999–2000 they spent an average of $401 per student to support educational technology in their schools. In comparison, according to a national survey, public school districts planned to spend $113 per student on educational technology in the 2000–2001 school year.[24] These expenditures covered all aspects of supporting educational technology, such as purchasing computer hardware and software, installing and upgrading local and wide area networks, paying for technical support and training for teachers, and paying for telecommunications access.

[24]Quality Education Data, Inc., *Technology Purchasing Forecast 2000–2001, 6th Edition* (Denver, Colo.: 2000).

## Extensive Problems With BIA School Facilities Reported

Most of the BIA school administrators responding to our survey reported significant problems with the condition of their facilities. They noted problems with specific building features, such as roofs and plumbing, and with certain environmental conditions, such as indoor air quality. In addition, they indicated that work spaces for teachers and students, such as classrooms and libraries, were insufficient. The extent of the concerns they reported in the survey are reflected in BIA's backlog of maintenance and repair needs. Among the backlog of such needs, which was recently verified by an independent engineering firm, is more than $960 million in needed repairs for school facilities and dormitories. A contributing factor to the facility needs of BIA schools is their isolation. Many schools are located in remote areas where, in addition to maintaining school buildings and grounds, facilities managers must also maintain other components of the infrastructure such as water and sewer systems, electric utilities, and fire stations—systems normally provided by local municipalities for most public schools. The Congress has recently increased funding used to address the backlog. However, budget allocations for the maintenance and repair of facilities have generally been less than amounts recommended by national guidelines.

## BIA School Buildings, Features, and Work Spaces Reported To Be Less Than Adequate

Compared to an earlier survey of administrators in public schools, significantly more BIA school administrators responding to our survey reported that the overall condition of their buildings and specific building features was inadequate. As shown in table 4, administrators at 65 percent of BIA schools reported that one or more of their school buildings was in less-than-adequate condition and 76 percent of boarding schools reported the same for their dormitory buildings.[25] In comparison, in a 1999 Education survey on the condition of public school buildings,[26] administrators at about one-quarter of public schools reported that one or more of their buildings was in less-than-adequate condition. Looking back

[25]Our survey asked school administrators to rate the condition of original buildings, attached or detached permanent additions to original buildings, and temporary buildings such as portables or trailers.

[26]NCES, *Condition of America's Public School Facilities: 1999*, NCES 2000-32 (Washington, D.C.: U.S. Department of Education, June 2000).

to reported conditions in 1994, the conditions of both BIA and public schools appear to have generally improved.[27]

Administrators also reported that specific features of school buildings and dormitories, such as the plumbing system or roof, needed substantial repair or replacement. Overall, more than 70 percent of responding BIA schools reported that one or more of the features of school buildings was in less-than-adequate condition and 87 percent of boarding schools reported the same for dormitory buildings. In contrast, administrators at half of public schools reported that one or more of the features in their school buildings was inadequate. As shown in table 4, for many of the features listed, BIA administrators were at least twice as likely as public school administrators to report that their school buildings and dormitories had inadequate building features.

[27]GAO conducted a survey of public school and BIA school building conditions in 1994. Our current survey (2000) asked questions similar to those used in our 1994 survey and Education's 1999 survey of public schools. For results from our previous study, see *School Facilities: Condition of America's Schools* (GAO/HEHS-95-61, Feb. 1995) and *School Facilities: Reported Condition and Costs to Repair Schools Funded by the Bureau of Indian Affairs* (GAO/HEHS-98-47, Dec. 1997). It should be noted that the results of our 1994 study of BIA schools reflect the reported conditions of responding schools; survey response rates were too low (41 percent) to permit generalization to all BIA schools.

Table 4: Reported Facility Deficiencies for BIA Schools and Dormitories and Public Schools

| Building deficiencies | Percentage of schools reporting inadequacy | | |
|---|---|---|---|
| | BIA schools[a] | BIA dormitories[a] | Public schools[b] |
| **Onsite school buildings** | | | |
| One or more buildings in less-than-adequate condition (original buildings, additions to original buildings, and temporary buildings) | 65 | 76 | 24 |
| **Features of onsite buildings** | | | |
| One or more inadequate building features | 72 | 87 | 50 |
| Roofs | 48 | 50 | 22 |
| Framing, floors, foundation | 41 | 61 | 14 |
| Exterior walls, finishes, windows, doors | 49 | 57 | 24 |
| Interior finishes, trim | 39 | 58 | 17 |
| Plumbing | 47 | 66 | 25 |
| Heating, ventilation, air conditioning | 54 | 76 | 29 |
| Electric power | 43 | 66 | 22 |
| Electrical lighting | 34 | 65 | 17 |
| Safety features such as sprinklers, fire alarms, smoke detectors | 37 | 53 | 20 |

[a]Source: GAO survey.

[b]Source: NCES, *Condition of America's Public School Facilities: 1999*, NCES 2000–32 (Washington, D.C.: U.S. Department of Education, June 2000).

Administrators responding to our survey also indicated that some environmental conditions were a problem in their schools. For example, over 40 percent reported unsatisfactory indoor air quality, acoustics or noise control, or physical security in their buildings. Administrators at over 70 percent of responding boarding schools reported the same for dormitory buildings. In comparison, these environmental conditions were a problem for 20 percent or less of public schools in 1999.

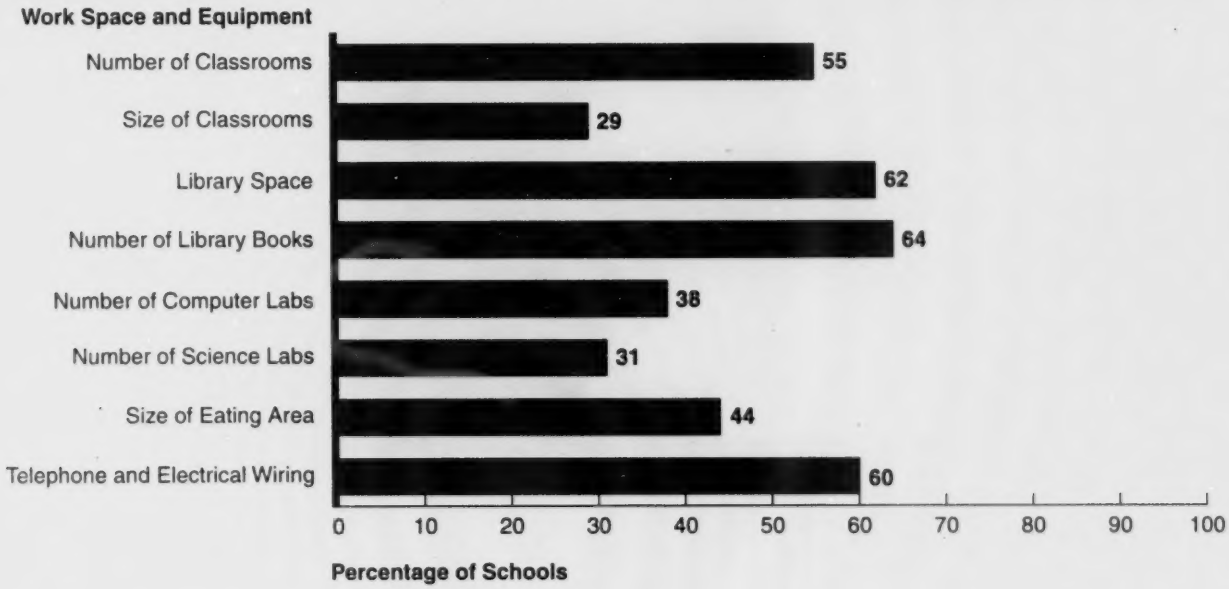
During our site visits, school officials indicated various problems with their school buildings. For example, the principal of a school in Washington said that in one portable classroom building the roof and windows leaked, and in two buildings there was a continuous problem with mold in the walls, which was difficult to control due to the wet climate. She said that the mold was a health problem for children with certain allergies. In a South Dakota school, a teacher expressed concerns about aging asbestos floor tiles in her classroom that had to be partially removed due to cracking, leaving other tiles exposed. Asbestos floor tiles, which are present in more than 90 of BIA's schools, can be a threat to the

health of students and staff if the asbestos fibers are disturbed, released into the air, and inhaled.[28]

In addition to questions about the condition of buildings and aspects of their environment, our survey asked administrators about the sufficiency of work spaces for students and teachers, such as classrooms, libraries, labs, and eating areas. We also asked whether some of these work spaces were adequately equipped—for example, whether libraries had sufficient numbers of books or whether buildings were adequately wired to support technology needs. As shown in figure 7, many BIA school administrators responding to our survey reported that various work spaces and equipment were insufficient at their school. For example, administrators at 55 percent of responding schools reported that the number of classrooms was insufficient and over 60 percent reported the space in their libraries was a problem. Insufficient classroom space was noted by officials at some schools we visited. For example, at a large K–12 school in South Dakota, officials said that the number of students in the high school building exceeded capacity. According to school officials, the building was intended to house 250 students, but they currently had about 400 students enrolled. In an Arizona school, because there was no other space, the school held special education classes in an area previously used for storage and teachers used partitions to separate the different groups of students.

[28]Asbestos is a fibrous mineral that was used widely from the 1950s through the early 1970s in construction materials, such as shingles for roofing and siding, pipe and boiler insulation, floor tiles, ceiling panels, coatings, and gaskets. It is present in most BIA schools in the form of floor tiles and/or insulation. A danger occurs when tiny asbestos fibers are released into the air and can be inhaled or swallowed, increasing the potential for conditions such as lung cancer.

**Figure 7: Percentage of BIA Schools Reporting That Various Work Spaces and Equipment Are Insufficient**




Source: GAO survey.

A large proportion of BIA schools (60 percent) also reported that the capacity of the building's telephone and electrical wiring systems to support computers, the Internet, and telephones was inadequate for their buildings. For BIA schools with insufficient telephone and electrical wiring, the age of the buildings may be a factor. Almost half of the buildings are more than 30 years old and almost 15 percent are between 50 and 100 years old. The principal of an Arizona school built in the 1930s said that most of the electrical wiring in the school is original and as new technology has been added, they have had frequent problems with system overloads. He said that this is likely to get worse as more new technology is added.

## BIA Reports Needing More Than $960 Million To Address Educational Facilities Deficiencies but Funding Has Been Increasing

Administrators' concerns about the condition of their facilities are reflected in the BIA backlog of deferred maintenance and repairs.[29] This backlog is a catalog of deficiencies—related to buildings, surrounding grounds, and other infrastructure—identified by architects, engineers, facilities managers, and safety officers over the years. The inventory describes in detail individual work items required in schools to meet national standards and codes such as the Uniform Building Code and National Fire Codes. The backlog contains a description of the work that needs to be done and the estimated cost for each item. The deficiencies may involve safety and health, access for persons with disabilities, or noncompliance with building codes. Recently, BIA's backlog was validated by an independent engineering firm.[30] According to BIA officials and representatives from the engineering firm, this process included on-site inspections of each BIA school building. Based on their inspections, the engineers validated current projects and their cost estimates, removed items that had already been addressed, and added new deficiencies they identified.

As of February 2001, BIA's backlog for educational facilities totaled $962 million[31]—an increase of almost $270 million (in current dollars), or 39 percent, since October 1997.[32] Table 5 shows estimated costs from BIA's backlog to address deficiencies related to certain building features at BIA schools. BIA school administrators often indicated problems with these features in our survey. For example, the cost to address all deficiencies

[29]Maintenance is generally defined as the upkeep of property and equipment and includes the adjustment, cleaning, or lubrication of equipment; replacement of parts; painting; and other actions to assure continuing service and prevent breakdown. Deferred maintenance is maintenance that was not performed when it should have been or when it was scheduled to be and which, therefore, is put off or delayed for a future period. Repair is work to restore damaged or worn-out property to a normal operating condition. Repairs are curative, while maintenance is preventive.

[30]The review of BIA's backlog was conducted by Applied Management Engineering, Inc. (AME). In addition to the validation of the backlog, AME developed a process for BIA to ensure the consistency and quality of information going into the backlog. AME is also conducting a study on the adequacy of operations and maintenance funding for BIA schools and an assessment of their facilities with respect to educational program needs, according to AME's general manager.

[31]According to a BIA official, in some cases, the backlog may include both the deficiencies for a certain building and the estimated cost for planning, design, and/or construction to replace that same building.

[32]See *School Facilities: Reported Condition and Costs to Repair Schools Funded by Bureau of Indian Affairs* (GAO/HEHS-98-47, Dec. 31, 1997).

related to heating, ventilation, and air conditioning systems in schools totaled more than $63 million at the time of this review. Administrators at more than half of the schools responding to our survey indicated problems with these systems. One school we visited in Arizona did not have a central cooling system, so each classroom had an air conditioner or evaporative cooling unit. The principal said the units were quite old and so noisy that they disrupted the students' learning environment.[33]

**Table 5: Selected Reported Deficiencies and Estimated Repair Costs for BIA Schools and Dormitories**

| Building features often indicated as inadequate[a] | Estimated cost to repair related deficiencies[b] (dollars in millions) |
|---|---|
| Heating, ventilation, air conditioning | $63.2 |
| Plumbing | 31.6 |
| Roofs | 24.5 |

[a]Source: GAO survey.

[b]Source: BIA backlog data as of February 2001.

More than $127 million of the backlog total represents deficiencies related to the health and safety of students, and a significant portion of this ($44 million) relates to fire safety alone. For example, the backlog lists buildings at more than 100 schools that need to have their fire alarm systems replaced or upgraded because they are old, not working, or missing. At one school we visited, the facilities manager said that the fire alarm system on the school campus was no longer reliable, and that it was so old that buying replacement parts was becoming difficult. With respect to sprinkler systems, the BIA Chief of Safety and Risk Management said that it is BIA's goal to have sprinkler systems and smoke detectors in all dormitories to ensure the safety of the residents. However, at the time of our review, the backlog showed that more than half of the 54 boarding schools' dormitories needed sprinkler systems either to be installed or upgraded. None of the boarding schools we visited had sprinkler systems in student dormitories. In addition, a dormitory at one school was closed due, in part, to fire-related safety deficiencies, according to the school superintendent.

[33]Some studies have concluded that school facility conditions, such as inadequate ventilation, faulty heating systems, and excessive noise, can affect student learning as well as the health and morale of staff and students. However, overall, the research is inconclusive and many scholars say that more research is needed to establish a link between school facility conditions and student performance.

A contributing factor to BIA school facility needs and the backlog is that BIA schools have to support a more extensive infrastructure than most public schools. Because many BIA schools are located in isolated areas, they maintain their own water and sewer systems, electric utilities, fire stations, and other important services that are generally provided to public schools by municipalities. Among the 171 BIA schools and 14 peripheral dormitories, 146 sites (79 percent) had responsibility for maintaining some kind of water infrastructure such as wells, water distribution lines, and/or water treatment facilities; 138 (75 percent) had responsibility for sewer infrastructure, such as sewage lagoons and sewage lines; and 52 schools (30 percent) operated and maintained fire trucks.

BIA officials indicated that providing and maintaining this additional infrastructure was a considerable drain on resources. For example, at a K–8 school we visited in Arizona, the facilities manager said that his staff must maintain a water system that includes five wells with distribution lines, pumps, pump houses, and water storage tanks; a sewer system that includes sewer lines, a lagoon, and a lift station; a fire station, fire truck, and hydrants; and a landfill. The facilities manager said the school has chronic problems with the sewer system, and an independent engineering firm has recommended that the sewer mains and service lines be replaced. For water and sewer systems alone, deficiencies in BIA's backlog for educational facilities totaled almost $56 million.

BIA's infrastructure also includes dormitory facilities for boarding students and housing for staff and their families. In total, BIA schools support 157 dormitory buildings for students and 1,879 single-family quarters and 194 apartment buildings for employees. However, we did not include employee housing in the scope of our study because the rent paid by staff is meant to cover the upkeep of these facilities.

Funding from BIA's construction budget that is used largely to address the backlog was increased substantially by the Congress last year. This funding more than doubled from $40 million in fiscal year 2000 to $110 million in fiscal year 2001. BIA uses this funding to support a wide range of facility-related activities, including minor projects, such as the replacement of boiler systems, and major projects, such as the replacement of a natural gas line or the renovation of a school office building. In addition, the Congress provided even greater increases for replacement school construction the last 2 years. Funding rose from $17 million in fiscal year 1999 to $141 million in fiscal year 2001. This funding can reduce the backlog when new facilities are constructed to replace

those that cannot accommodate current education programs or are beyond repair.

## BIA Funding for Maintenance and Repair Is Less Than National Guidelines

While funding has increased during the last few years for certain facility-related line items in BIA's budget, we attempted to look more closely at funding available specifically for maintenance and repair needs. Adequately funding maintenance and repair is important because deferral of these tasks can increase the backlog. One guideline set forth by the National Research Council (NRC)[34] considers maintenance and repair budgets in terms of the current replacement value of buildings.[35] The NRC has recommended that budget allocations for routine maintenance and repair be in the range of 2 to 4 percent of the current replacement value of buildings.[36]

Using NRC's definitions, we extracted and combined pieces of BIA's budget to identify funding available for the maintenance and repair of buildings and other infrastructure and determined that funding levels were below those recommended by the NRC. From 1997–2000, funding requested for and allocated to the maintenance and repair of BIA schools was between 1.5 percent and 1.8 percent—below the lower end of the recommended range of 2 to 4 percent. Funding increased in fiscal year 2001, resulting in maintenance and repair budget allocations providing about 2.5 percent of current replacement value that year. However, based on discussions with recognized experts in budgeting and facilities operations and maintenance, even with this increase, budget allocation levels over the past 5 years have been too low.[37] These experts suggested that because of the extensive infrastructure beyond buildings that BIA must support, the isolation of the schools which dramatically increases maintenance and repair costs, and the age of BIA facilities, BIA schools

[34]NRC is the principal operating agency of both the National Academy of Sciences and the National Academy of Engineering in providing advisory services in science and technology to the federal government and other entities.

[35]Current replacement value is the amount in current dollars it would cost to duplicate the facility.

[36]NRC, *Committing to the Cost of Ownership: Maintenance and Repair of Public Buildings* (Washington, D.C.: National Academy Press, 1990).

[37]The experts we spoke with included a member of the National Academy of Engineering, two engineering consultants, and a retired director of facilities for a historical society with past experience developing capital and facilities operations budgets for the Congress.

likely require maintenance and repair funding in the range of 4 to 6 percent of current replacement value.

## Estimated Expenditures Per Pupil for BIA Schools Are Higher Than Public Schools', and Vary Substantially Between Categories of Schools

Estimated per-pupil expenditures for BIA day schools were $9,647 in 1997–98.[38] In comparison, the national average per-pupil expenditure for public schools was $6,189 in 1997–98, the latest year for which national data were available at the time we did our work. It is important to note that per-pupil expenditures can range widely. Within the 50 states, per-pupil expenditures for public schools in 1997–98 ranged from $4,288 in Mississippi to $9,643 in New Jersey.

Estimated per-pupil expenditures at BIA schools also varied widely depending upon the type of school. As shown in table 6, BIA boarding school expenditure estimates were almost $2,000 more per pupil than BIA day schools overall; the additional estimated expenditures for the boarding schools were likely due to their residential components. Among BIA day schools, estimated expenditures per pupil were higher for tribally operated schools than BIA-operated schools.

**Table 6: Comparison of Per-Pupil Expenditures at BIA and Public Schools, 1997–98**

| BIA-funded schools | Estimated per pupil expenditure | Public schools | Per-pupil expenditure[b] |
|---|---|---|---|
| Day schools | $9,647 | All schools | $6,189 |
| BIA-operated | 7,677 | Rural schools | 5,817 |
| Tribally operated | 10,423 | Large city schools | 6,293 |
| Boarding schools[a] | $11,643 | | |

[a]Includes BIA-operated and tribally operated boarding schools.

[b]Data are from the National Public Education Financial Survey, Fiscal Year 1998, as cited in NCES' *Statistics in Brief: Revenues and Expenditures for Public Elementary and Secondary Education: School Year 1997–98*, NCES 2000–348 (Washington, D.C.: U.S. Department of Education, May 2000).

One reason for the difference between estimated per-pupil expenditures for day schools operated by BIA and those by tribes is that tribally operated schools bear higher administrative costs—each school must

[38]Our analysis of expenditures at BIA schools considered expenditures from federal funding sources alone. According to BIA officials, federal funds constitute by far the largest part of funding for BIA schools. The national per-pupil expenditure figures include funding from federal, state, local, and private sources.

provide its own accounting and other support services that otherwise would be provided by BIA for a comparable BIA-operated school. To support these additional operating expenses, BIA provides administrative cost grants to tribally operated schools, which averaged about $1,400 per student in 1997–98.

In comparing BIA and public school per-pupil expenditures, it is difficult to draw meaningful conclusions because the many factors that distinguish BIA schools from public schools may add to their educational costs. Special-needs students generally require additional educational resources and, as mentioned previously, a high proportion of BIA students have special needs. For example, according to BIA records for the 2000–2001 school year, about 21 percent of BIA students are enrolled in special education compared with 13 percent of public school students, and 58 percent of BIA students have limited English proficiency, compared with 8 percent of public school students.[39] Available data also indicate that a high proportion of BIA students are poor.[40] The student populations of BIA schools in fact may be more similar to those of large city or rural public schools, where higher proportions of students tend to have special needs.

Other characteristics of BIA schools may lead to increased expenditures. The isolation that results in additional infrastructure needs for BIA schools also results in higher costs in other areas, such as transportation. For example, the number of miles transported per student for BIA schools in school year 1999–2000 was about 296, while that of public schools was about 165 for school year 1998–1999. Many of the miles traveled by BIA students are on unimproved roads or roads in poor condition, which increases wear and tear on vehicles. BIA also provides long-distance transportation four times a year for many of the 8,000 students living in boarding schools. Because BIA schools are generally small and often far

[39]Data on the proportion of public school students in special education are for 1998–99 and are from *Digest of Education Statistics 2000* (Washington, D.C.: U.S. Department of Education, Jan. 2001). Data on the proportion of public school students who are considered to have limited English proficiency are for 1996–97 and are from the National Clearinghouse for Bilingual Education *Summary Report of the Survey of the States' Limited English Proficient Students and Available Educational Programs and Services 1996–97* (Washington, D.C.: George Washington University, Graduate School of Education and Human Development, Sept. 1998).

[40]As noted earlier, available data for 123 of the 171 BIA schools show that over 80 percent of students were eligible for free or reduced-price lunch for school year 1999–2000. According to data from USDA, about 40 percent of students enrolled in schools nationwide are approved for free or reduced-price lunch.

from each other, it can be difficult for them to achieve economies of scale. Many, for example, must have their own facility maintenance shops and garages; in contrast, public school districts generally have such facilities that serve several schools.

## The DOD School System

DOD students' academic achievement generally exceeds that of elementary and secondary students as measured by national standardized tests. DOD school administrators indicated that nearly all teachers in DOD schools are certified in the subjects or grades they teach, and the majority of teachers hold advanced degrees—this proportion is greater than the national average for public school teachers. Students' access to computers reported by DOD school administrators is greater than that reported for public schools nationwide. In addition, the vast majority of DOD schools provide their teachers with technical and instructional assistance for using computers in the classroom. Many DOD school administrators reported some problems with their school facilities and some reported that work spaces for teachers and students were not adequate. However, overall the conditions of facilities reported by DOD schools and public schools in 1999 were not substantially different. The estimated per-pupil expenditure for DOD schools is higher than the national average, and the estimated per-pupil expenditure is higher for overseas schools than for domestic schools.

### Academic Performance of DOD Students Exceeds That of Students Nationally

On standardized achievement tests, DOD students on average score at or above national norms. DOD schools use the TerraNova Multiple Assessments to assess students in grades 3 through 11. In math and language arts, DOD students' average national percentile rankings ranged from the 61st percentile to the 72nd percentile (see table 7). Overseas and domestic schools scored in a comparable range. By definition, the national average is the 50th percentile. At most grade levels, the rankings for overseas schools were a few points higher than those for domestic schools. For both boys and girls, and for various ethnic groups, DOD students were at or above national averages. On the National Assessment

of Educational Progress (NAEP), another standardized test, DOD students scored at or above national benchmarks.[41]

**Table 7: National Percentile Rankings for Students in DOD Schools on the TerraNova Multiple Assessments Standardized Tests for School Year 1999–2000**

| | National percentile rankings | |
|---|---|---|
| Grade | Language arts | Math |
| 3 | 63 | 61 |
| 4 | 64 | 64 |
| 5 | 64 | 63 |
| 6 | 68 | 65 |
| 7 | 66 | 65 |
| 8 | 68 | 62 |
| 9 | 70 | 66 |
| 10 | 72 | 72 |
| 11 | 68 | 67 |

Source: DOD data.

On other measures that are often used as indicators of students' academic achievement, such as college admissions tests and plans to attend college, DOD students generally perform as well as or better than public school students. A high proportion of DOD students take college admissions tests, scoring at or near national averages. (See table 8.) In addition, DOD school administrators reported that about three-quarters of DOD graduates plan to pursue higher education. Nationally, just under two-thirds of high school graduates are enrolled in college the year after they complete high school. DOD administrators responding to our survey also estimated that about 60 percent of their graduates planned to enter 4-year colleges and another 15 percent planned to enter 2-year colleges. Nationally, about 40 percent of high school graduates enroll in 4-year colleges the year after they graduate and about 24 percent enroll in 2-year colleges.

[41]The NAEP is a nationally administered test that assesses students' proficiency in different subject areas, such as reading, math, and writing, in different years. We examined DOD data on students' performance on the NAEP in math (1996), reading (1998), and writing (1998).

**Table 8: Average SAT and ACT Scores for DOD and Public School Students Graduating in 2000**

| | SAT scores | | ACT scores | |
|---|---|---|---|---|
| | Verbal | Math | English | Math |
| DOD students | 504 | 500 | 21.3 | 20.8 |
| National average | 505 | 514 | 20.5 | 20.7 |

Source: DOD data.

The academic achievement of DOD students may be influenced by socioeconomic factors and a "common culture" engendered by military service. Education research has strongly associated student academic achievement with parental education, income levels, and family structure. In each of these areas, military families fare relatively well. For example, nearly all military enlistees are high school graduates and relatively high proportions of the parents of DOD students have attended or graduated from college. Moreover, while a considerable portion of children in DOD schools are eligible for free or reduced-price lunch programs (32 percent), this is less than the proportion in public schools (40 percent); in addition, military families receive benefits, such as tax-free housing allowances or free housing on base, that are not considered in eligibility determinations for the lunch programs. Finally, nearly 90 percent of military school-age children reside in two-parent families compared with 70 percent of children in public schools, although DOD families are affected by the absence of parents deployed away from home.

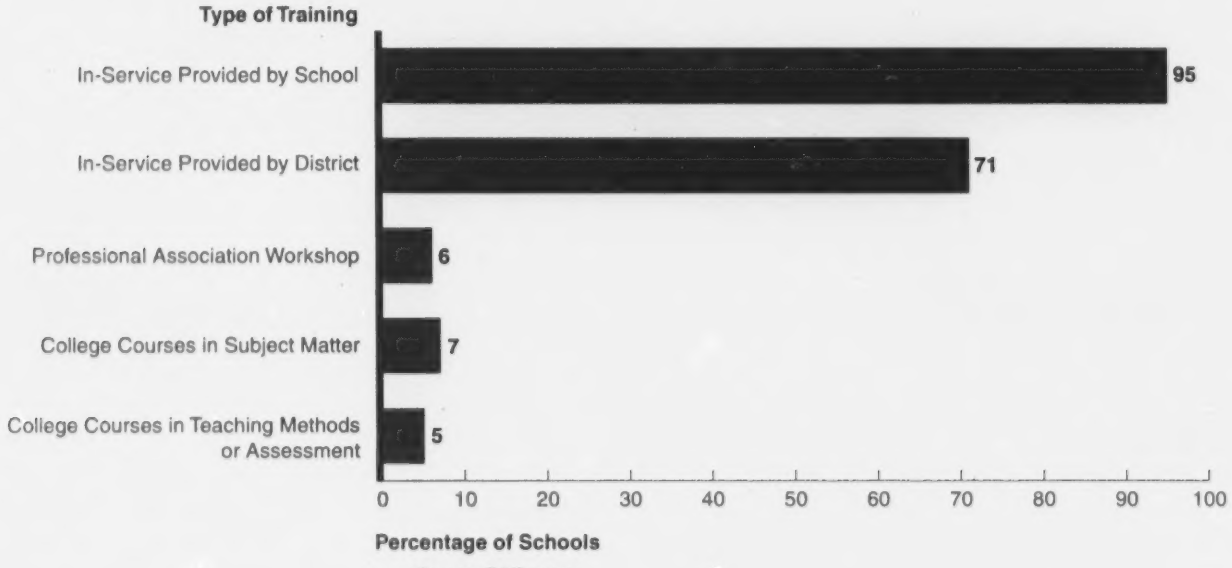
In addition to these socioeconomic factors, DOD schools receive unique support from the military and its culture. Military commands support the schools in their jurisdictions and encourage their staffs to do so as well—for instance, by making parent-teacher conferences a duty or fostering volunteer work in the schools. Staff at DOD schools are sensitive to the unique circumstances of military families, such as the deployment of military parents away from home and frequent family moves to new duty stations. According to a recent study, military children move through an average of six school districts between kindergarten and the completion of high school. Therefore, DOD is developing standardized curricula in its schools that are intended to help overcome some problems associated with high student mobility.

## DOD Teachers Are Certified and Most Have Advanced Degrees

Administrators responding to our survey indicated that virtually all teachers in DOD schools are certified in the subjects or grades they teach, both in domestic and overseas schools. About two-thirds of teachers in DOD schools have advanced degrees compared to about 46 percent of public school teachers generally. Again, this proportion was about the same for both domestic and overseas schools.

DOD teachers have access to various kinds of professional development, and DOD schools support professional development in several ways. For example, 95 percent of the DOD schools that responded to our survey reported that the majority of their teachers received in-service training provided by the school during the 1999–2000 school year. Other types of training are shown in figure 8.

**Figure 8: Percentage of DOD Schools Reporting That a Majority of Teachers Received Various Types of Training**




Source: GAO survey.

DOD schools facilitate their teachers' professional development in several ways. Nearly all DOD schools reported allowing time off to participate in training and setting days aside for training. In addition, nearly nine out of ten schools reported paying travel or per diem for training; about half reported paying tuition or fees. These types of training and supports for

professional development are comparable to those for public school teachers generally, nearly all of whom reported having some professional development with similar kinds of support from their schools.[42]

DOD officials related few problems attracting teachers to domestic schools but noted that recruiting was somewhat more difficult in certain overseas locations, particularly in parts of Asia. To ease recruiting, DOD often pays moving expenses for teachers it hires in the U.S. to work in overseas schools. DOD provides transportation for the employees and their family members, and ships their household goods to and from the overseas area. Applicants recruited in the U.S. for overseas posts also receive housing allowances to cover rent and utility costs.[43]

Class sizes reported by DOD administrators are close to national averages with no consistent pattern between domestic and overseas schools. Nationally, in 1998, the average class size was 23 students for general elementary classrooms and 24 students for teachers in departmentalized settings. The median number of students per classroom reported by DOD schools was in the low 20s in grades K through 8 and in the high teens in grades 9 through 12, as shown in table 9.

**Table 9: Median Class Sizes at DOD Schools**

| | Median number of students per class | | | |
|---|---|---|---|---|
| | Grades K to 3 | Grades 4 to 6 | Grades 7 to 8 | Grades 9 to 12 |
| Overseas schools | 22 | 24 | 20 | 19 |
| Domestic schools | 20 | 23 | 23 | 19 |

Source: GAO survey.

Beginning in school year 1999–2000, DOD obtained additional funding to reduce class sizes in grades 1 through 3 in order to enhance learning opportunities and improve the quality of instruction. The target is a pupil-teacher ratio of 18 to 1. Reduced class sizes were to be implemented in 18 overseas schools and 25 domestic schools, with all DOD schools phased in over the next 6 years.

[42]NCES, *Schools and Staffing Survey, 1993–94* (Washington, D.C.: U.S. Department of Education).

[43]According to a DOD official, a small number of staff in DOD overseas schools live in government-provided quarters, but the majority receive allowances intended to cover the cost of housing in the areas where they choose to live.

## Technology Access and Support Reported by DOD Schools is on Average Greater Than Public Schools

Based on the responses of DOD school officials to our survey, DOD students appear to have greater access to computers, including computers connected to the Internet, than do public school students nationwide. These administrators reported having about 1 instructional computer for every 3.7 students. This ratio is slightly better than the national average reported by NCES for 2000. (See table 10.) We do not know about the quality or capacity of computers in DOD schools, but a significant portion of these computers (59 percent) are 3 years old or older.

Administrators at DOD schools reported that students had 1 computer connected to the Internet available for every 4.8 students. This ratio also is better than the ratio for public schools nationwide (1 computer for every 7 students). In addition, DOD administrators reported that almost 90 percent of instructional rooms in their schools have at least one computer with a connection to the Internet. This figure exceeds the national average in 2000 by more than 10 percentage points.

**Table 10: Technology Statistics for DOD and Public Schools**

| | DOD schools[a] | Public schools[b] |
|---|---|---|
| Number of students per instructional computer | 3.7 | 5 |
| Number of students per instructional computer with Internet access | 4.8 | 7 |
| Percentage of schools connected to the Internet | 100 | 98 |
| Percentage of instructional rooms with Internet access | 89 | 77 |
| Percentage of schools using dial-up connections to the Internet[c] | 5 | 11 |

[a]Data for DOD schools come from GAO's survey, with the exception of the percentage of schools connected to the Internet, which was provided by a DOD official. Data represent technology access in DOD schools at the time of our survey, which was administered in Nov. 2000.

[b]Public school data are for school year 1999–2000 and come from NCES' *Internet Access in U.S. Public Schools and Classrooms: 1994–2000*, NCES 2001–071 (Washington, D.C.: U.S. Department of Education, May 2001).

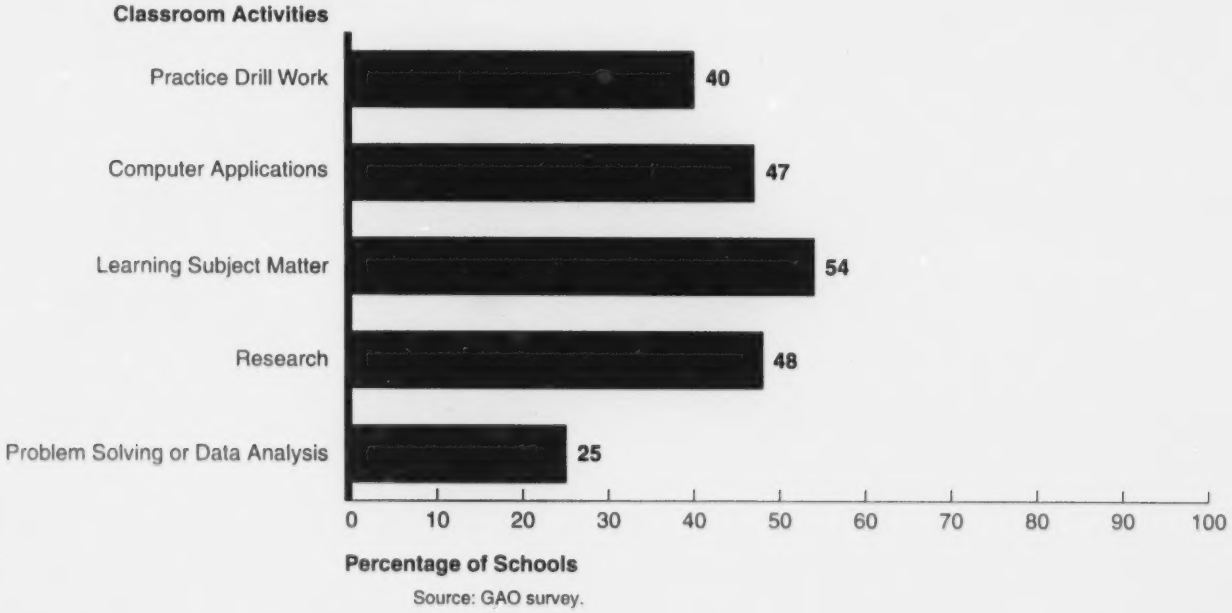
[c]Other types of connections schools may be using include dedicated line, cable modem, and wireless connection.

DOD schools also appear to have greater staff support for technology than public schools nationwide. Almost all DOD school administrators reported that in 2000 they had paid (versus volunteer) staff that maintained technology and provided technical assistance. In addition, 98 percent of DOD schools have paid staff to support teachers in using technology for instruction. In a survey conducted by Education in 1999, 95 percent of public schools reported having some paid staff to support advanced telecommunications in their school. A school technology administrator at

one Army base told us that each school on the base has a technologist available to instruct teachers on how to use technology in the classroom, and that, as a result, teachers were integrating the technology into the curriculum on a daily basis. At one school in this district, first graders were learning how to create and deliver PowerPoint presentations.

As previously noted, though research suggests that effective use of technology in the classroom can improve student learning, research is inconclusive concerning what types of classroom activities are best served by technology. In responding to our questions concerning teachers' use of computers in the classroom, about half of DOD school administrators reported that the majority of their teachers regularly engage students in the use of computers to learn subject matter, conduct research, and learn computer applications. Fewer DOD administrators reported that a majority of their teachers are routinely using computers to develop student problem-solving or data-analysis skills or for drill and practice purposes. (See fig. 9.)

**Figure 9: Percentage of DOD Schools Reporting That a Majority of Teachers Assign Students Computer or Internet Work At Least Once Per Week for Various Classroom Activities**




Source: GAO survey.

DOD schools appear to be making significant investments in educational technology. According to agency records and estimates, the DOD school system obligated about $356 per student for educational technology in fiscal year 2000 for domestic and overseas schools. By comparison, according to a national survey, public school districts planned to spend $113 per student on educational technology in the 2000–2001 school year.[44]

## Administrators Report Some Problems With DOD School Facilities

Many DOD school administrators responding to our survey reported problems with their school facilities but, for the most part, their responses were not substantially different from those reported nationally by public school administrators in 1999.[45] As shown in table 11, 32 percent of the school administrators reported that they had one or more buildings in less than adequate condition; in 1999, 24 percent of public school administrators responding to a national survey reported that they had one or more buildings in less than adequate condition. Looking at specific building features, such as roofs and plumbing, administrators at about half of both DOD and public schools reported having at least one inadequate feature. For many features, about the same proportion of DOD and public schools reported problems. For some features, including electric power, electrical lighting, and safety features, fewer DOD schools reported problems than public schools.

[44]Quality Education Data, Inc., *Technology Purchasing Forecast 2000-2001, 6th Edition* (Denver, Colo.: 2000).

[45]NCES, *Condition of America's Public School Facilities: 1999*, NCES 2000–32 (Washington, D.C.: U.S. Department of Education, June 2000).

**Table 11: Reported Facilities Deficiencies for DOD and Public Schools**

| | Percentage of schools reporting inadequacy | |
|---|---|---|
| | DOD schools[a] | Public schools[b] |
| **Building deficiencies** | | |
| **Onsite school buildings** | | |
| One or more buildings in less than adequate condition (original buildings, additions to original buildings, and temporary buildings) | 32 | 24 |
| **Features of onsite buildings** | | |
| One or more inadequate building features | 52 | 50 |
| Roofs | 21 | 22 |
| Framing, floors, foundation | 15 | 14 |
| Exterior walls, finishes, windows, doors | 20 | 24 |
| Interior finishes, trim | 14 | 17 |
| Plumbing | 22 | 25 |
| Heating, ventilation, air conditioning | 29 | 29 |
| Electric power | 14 | 22 |
| Electrical lighting | 11 | 17 |
| Safety features such as sprinklers, fire alarms, or smoke detectors | 14 | 20 |

[a]Source: GAO survey.

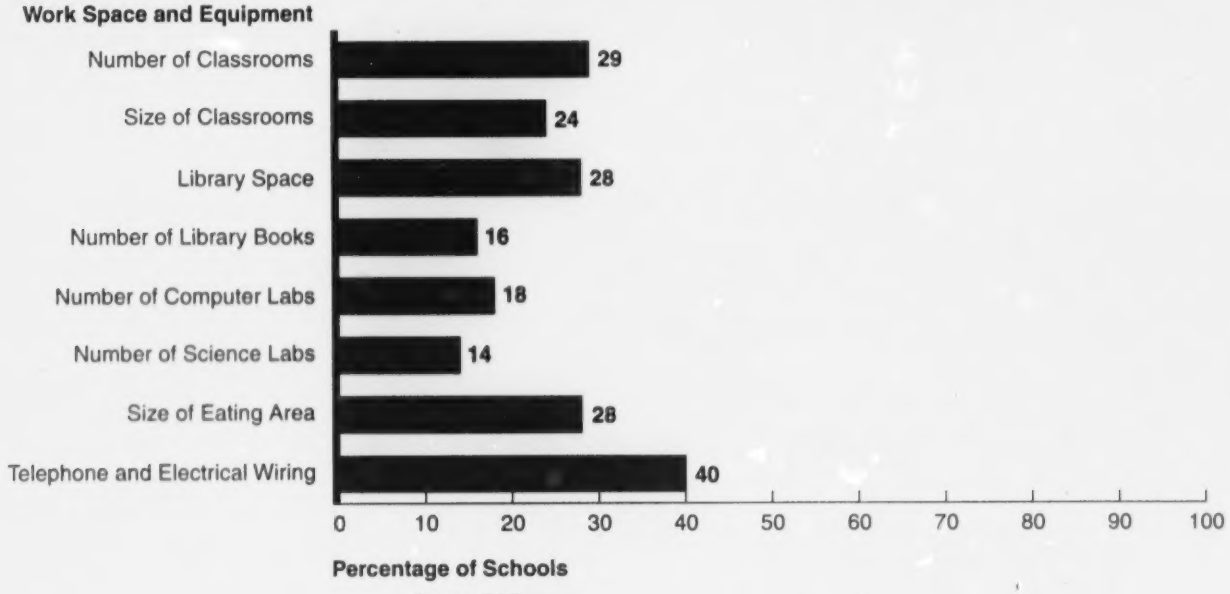
[b]Source: NCES, *Condition of America's Public School Facilities: 1999*, NCES 2000–32 (Washington, D.C.: U.S. Department of Education, June 2000).

When asked about the condition of certain environmental factors in DOD schools, such as indoor air quality, again about the same proportion of administrators at DOD schools as public schools reported unsatisfactory conditions. About 20 percent or less of administrators at DOD and public schools reported that indoor air quality, acoustics or noise control, or physical security were inadequate in their buildings.

Some DOD schools reported that various work spaces and equipment for students and teachers were insufficient at their schools: 29 percent of schools reported that the number of classrooms was insufficient; about the same proportion reported inadequate library space (see fig. 10). The principal of a 40-year-old school we visited that had not been renovated said that the lack of space for storage was a major problem. In addition, 40 percent of DOD schools reported that the telephone and electrical wiring in their facilities was inadequate. The problems with inadequate telephone and electrical wiring may be due to the age of DOD education facilities. About 60 percent of the DOD school buildings are 30 to 70 years of age,

and as the level of technology introduced into the schools has increased, so have the demands on the telephone and electrical systems.

**Figure 10: Percentage of DOD Schools Reporting That Various Work Spaces and Equipment Are Insufficient**




Source: GAO survey.

## DOD Reports Needing More Than $500 Million to Improve Educational Facilities

DOD estimates that about $529 million is needed to improve its educational facilities, as of May 2001. This estimate comes from the 5-Year Facilities Plan for DOD schools. This plan lists projects for repair and improvement identified by school engineers and principals.[46]

Each year, each DOD school principal and a DOD school district facilities engineer inspect the school facilities and grounds to validate existing projects on the plan, identify new projects, coordinate routine maintenance, identify construction projects, and discuss prioritization. Headquarters-level facilities officials prioritize the projects for DOD schools systemwide and determine which projects will be funded based on

[46]The 5-Year Facilities Plan for DOD schools also includes the cost to replace some schools. At the time of this review, the plan included the costs to replace six schools.

the availability of funds. Included on this list are repair and maintenance requirements that cost more than $25,000 for domestic schools and $10,000 for overseas schools. Projects below these levels are funded centrally out of school or district operations and maintenance budgets, according to the DOD's chief of school facilities. DOD school superintendents/principals and facilities managers at the schools we visited indicated that they were generally able to meet the repair and maintenance needs of their facilities with these funds.

Table 12 shows DOD's estimated costs to address deficiencies related to certain building features at DOD schools. DOD school administrators often indicated problems with these features in our survey. For example, the cost to address all deficiencies related to heating, ventilation, and air conditioning systems in schools totaled more than $44 million at the time of this review. Administrators at almost 30 percent of schools responding to our survey indicated problems with these systems. During our site visits to seven DOD schools in Alabama and Georgia, the condition of the heating, ventilation, and cooling systems was the most common complaint about school facilities.

**Table 12: Selected Reported Deficiencies and Estimated Repair Costs for DOD Schools**

| Building features often indicated as inadequate[a] | Estimated cost to repair related deficiencies[b] (dollars in millions) |
|---|---|
| Heating, ventilation, and air conditioning | $44.5 |
| Roofs | 29 |
| Playground surfaces and equipment | 21 |

[a]Source: GAO Survey.

[b]Source: 5-Year Facilities Plan for DOD schools, May 2001.

Funding to address projects in the 5-year plan comes primarily from repair and maintenance and minor construction allocations from the operation and maintenance budget for DOD schools, according to a DOD official. These allocations have decreased from about $71 million in fiscal year 1998 to $40 million in fiscal year 2000. According to agency officials, these decreases were implemented in part to help pay for escalating payroll costs at DOD domestic schools. In addition to allocations from the operation and maintenance budget, funding from the construction budget for DOD schools is used for projects in the 5-year plan. The construction budget has fluctuated over the last several years. In fiscal year 1999, the construction budget for DOD schools totaled $44 million; in fiscal year

2000, this amount rose to $82 million; and in fiscal year 2001, it decreased to $36 million.

## Estimated Expenditures Per Pupil for DOD Schools Are Higher Than Public Schools' and Vary Substantially Between Domestic and Overseas Schools

Estimated per-pupil expenditures for DOD domestic and overseas schools were above the national average for 1997–98 (see table 13), and DOD schools' estimated expenditures per pupil vary depending on their locations.[47] Schools located overseas tend to have substantially higher estimated per-pupil expenditures ($10,097) than DOD domestic schools ($7,725). Much of this difference, according to DOD data, reflects the added costs of having teachers and other school-related staff overseas.[48] These costs include such things as benefits paid to employees in connection with moves to overseas locations and allowances to compensate for substantially higher living costs outside the United States.

**Table 13: Comparison of Per-Pupil Expenditures at DOD and Public Schools, 1997–98**

| DOD schools | Estimated per pupil expenditure | Public schools | Per-pupil expenditure |
|---|---|---|---|
| Domestic | $7,725 | All schools | $6,189[a] |
| Overseas | 10,097 | | |

[a]Data are from the National Public Education Financial Survey, Fiscal Year 1998, as cited in NCES' *Statistics in Brief: Revenues and Expenditures for Public Elementary and Secondary Education: School Year 1997–98*, NCES 2000–348 (Washington, D.C.: U.S. Department of Education, May 2000).

## Agency Comments

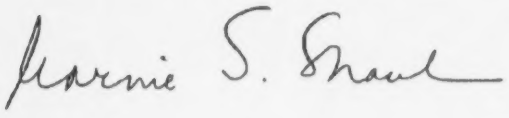
We provided officials at DOD, Education, and the Department of the Interior (Interior), which oversees BIA, an opportunity to comment on a draft of this report. In its written comments, DOD concurred with the content of the report and had no technical comments. DOD's letter is printed in appendix II. Education found the report to be helpful and informative and provided technical comments which we incorporated into the report when data were available. Interior provided written comments and agreed with many aspects of our report. However, the agency pointed

[47]DOD does not have readily available expenditure data to determine per-pupil expenditures. Therefore, we used obligation data as a proxy for expenditures.

[48]Although there are some such costs associated with teachers and school-related staff in Guam and Puerto Rico, they are much less than those for overseas schools because there are fewer schools in these locations than overseas.

out that BIA's students and schools are very different from those in the public school system and stated that in some cases GAO had made inappropriate comparisons between BIA schools and the public school system. Interior stressed this most with respect to measures we used to consider the academic performance of BIA students and our calculation of expenditures per pupil. However, we believe that we have provided a framework for our analysis that shows a sensitivity to these issues and that our analysis is a fair and balanced representation of the achievement of and expenditures for BIA students. We discuss Interior's comments in appendix III following the agency's printed letter. Interior also provided technical corrections which we incorporated where appropriate.

As agreed with your offices, unless you publicly release its contents earlier, we will make no further distribution of this report until 30 days after its issue date. At that time, we will send copies of this report to the Honorable Gale A. Norton, Secretary of the Interior; Neal McCaleb, Assistant Secretary of Indian Affairs, Department of the Interior; the Honorable Donald H. Rumsfeld, Secretary of Defense; John M. Molino, Deputy Assistant Secretary of Defense for Military Community and Family Policy; the Honorable Roderick R. Paige, Secretary of Education; appropriate congressional committees; and other interested parties. Please call me at (202) 512–7215 if you or your staff have any questions about this report. Key contacts and staff acknowledgments for this report are listed in appendix IV.



Marnie S. Shaul
Director, Education, Workforce,
and Income Security

# Appendix I: Scope and Methodology

This appendix discusses in more detail the scope and methodology for examining the following aspects of Bureau of Indian Affairs (BIA) and Department of Defense (DOD) school systems: (1) student achievement, (2) teacher staffing, (3) access to educational technology, (4) condition of school facilities, and (5) expenditure levels.

The scope of our review included BIA day schools and boarding schools, and DOD schools located both in the United States and overseas. To the extent we could, we excluded from our analyses BIA peripheral dormitories, which house Indian students on reservations who attend nearby public schools and generally do not have academic programs. Our focus was the 1999–2000 school year, and most of the data we collected relate to that year.

A major source of information for this review was a mail survey of administrators at all BIA and DOD schools. We pretested a draft questionnaire at eight schools and revised it based on their comments. In November 2000, we mailed the final questionnaire to all 171 BIA schools and 224 DOD schools. We did follow-up mailings in January and March 2001 and accepted returns through early May 2001, yielding response rates of 81 percent for BIA schools and 92 percent for DOD schools. We did not independently verify the accuracy of the information provided in the questionnaire responses. In addition to information collected through the survey, we obtained budget, facilities, and other data from BIA and DOD, and testing data from state departments of education and college testing organizations. We obtained and reviewed supporting documentation for some budget and expenditure data but otherwise did not verify this information.

In the course of this review, we interviewed various staff at BIA's Office of Indian Education Programs and DOD's Department of Defense Education Activity who are responsible for education programs, budgets, technology, and facilities. As shown below, we also conducted site visits to nine BIA schools located in South Dakota, Arizona, Minnesota, and Washington and seven DOD schools located in the United States at three military installations—Maxwell Air Force Base in Alabama and Fort Benning and Robins Air Force Base in Georgia. At these schools, we toured the school facilities and met with a variety of officials, including principals, superintendents, education specialists, and facilities management staff. The BIA schools we visited were

- Greasewood Springs Community School, Ariz.,
- Hopi Day School, Ariz.,

- Muckleshoot Tribal School, Wash.,
- Chief Leschi School, Wash.,
- Flandreau Indian Boarding School, S. Dak.,
- Pine Ridge School, S. Dak.,
- Loneman Day School, S. Dak.,
- Fond du Lac Ojibwe School, Minn., and
- Nay-Ah-Shing School, Minn.

The DOD schools we visited were

- Maxwell AFB Elementary School, Maxwell AFB, Ala.,
- Dexter Elementary School, Fort Benning, Ga.,
- Faith Middle School, Fort Benning, Ga.,
- Loyd Elementary School, Fort Benning, Ga.,
- White Elementary School, Fort Benning, Ga.,
- Linwood Elementary School, Robins AFB, Ga., and
- Robins Elementary School, Robins AFB, Ga.

We obtained data on public schools from readily available sources, typically from Department of Education (Education) studies.

We conducted our work between June 2000 and July 2001 in accordance with generally accepted government auditing standards.

## Student Achievement

To provide an indication of BIA and DOD students' academic achievement, we reviewed their performance on standardized tests and state assessments. We also obtained data on their performance on college entrance examinations, namely the Scholastic Assessment Test (SAT) and the American College Test (ACT). In addition, our survey asked administrators to report on the post-high-school plans of graduating seniors.

For BIA schools, we attempted to collect data on BIA students' performance on state assessments from four states that account for more than 70 percent of all BIA schools—Arizona, New Mexico, North Dakota, and South Dakota. We were able to obtain data for all BIA schools in North Dakota and South Dakota and for 19 of 50 BIA schools in Arizona that participated in Arizona's state assessment program. No data were available for BIA schools in New Mexico, which has about one-quarter of all BIA students. In total, about 36 percent of BIA students attend the

schools to which our data relate. All data obtained were for school year 1999–2000.

From the North Dakota Department of Public Instruction, we obtained data on students' performance on the statewide assessment. North Dakota uses the TerraNova Basic Multiple Assessments to assess students in grade 4 and the TerraNova Complete Battery Plus to assess students in grades 6, 8, and 10. The state provided data on statewide averages for students' performance on the test, a breakdown of these scores by student ethnicity, and the scores for all BIA schools. We focused on students' total scores on the test and reported the range of scores across all grades. In South Dakota, schools use the Stanford Achievement Test to assess students in grades 2, 4, 8, and 11. From South Dakota's Department of Education, we obtained the average scores for students statewide, and the scores for all BIA schools on the complete battery and for specific skill areas such as language arts, reading, and math.[1] We reported specifically on the range of scores on the complete battery across all grades. Arizona uses an assessment test customized for its standards, called the Arizona Instrument to Measure Standards (AIMS), in grades 3, 5, 8, 10, and 11. AIMS classifies students into four categories in relation to the standards: Falls Far Below, Approaches, Meets, or Exceeds. The Arizona Department of Education provided us with statewide averages for students' performance on the AIMS, including a breakdown of statewide scores by ethnicity, and the scores for participating BIA schools. We reported the range for the proportion of children who met or exceeded the state standards, across all grades and across all subjects (reading, writing, and math).

We requested data on the performance of BIA students on the SAT and ACT from the respective college testing organizations. With BIA's approval, the testing organizations provided us data on the scores for BIA students who graduated in 1999 or 2000. It should be noted that a small number of BIA graduates (fewer than 70) take the SAT. Far more BIA students (about 800) take the ACT because BIA schools are located in areas of the country where the ACT is the predominant college admissions test.

BIA also provided the annual reports for virtually all BIA-funded schools, which include data on the proficiency of students as assessed by schools.

[1]The complete battery score is a composite score that includes all subject areas tested.

These assessments are based on multiple measures, which in addition to students' performance on standardized tests can include measures such as portfolios illustrating students' work, grades, teacher observations, and work samples.

DOD students in both overseas and domestic schools are assessed using the TerraNova Multiple Assessments in grades 3 through 11. We obtained data from DOD on students' performance for school year 1999–2000 and focused on students' scores in language arts and math. We reported the range of scores for students in all grades, across both language arts and math, and across students in both overseas and domestic schools. We also obtained data from DOD on students' performance on the National Assessment of Educational Progress (NAEP). The NAEP is a nationally administered test offered in different subject areas, such as reading, math, science, and writing, in different years. We examined DOD data on students' performance on the NAEP in math (1996), reading (1998), and writing (1998). We reviewed overall averages for DOD students in both overseas and domestic schools and compared these scores with national averages. Finally, we obtained SAT and ACT results from DOD for students graduating during the 1999–2000 school year.

## Teacher Staffing and Educational Technology

Nearly all information about BIA and DOD teacher qualifications and training was obtained through GAO's survey. Some information on teacher turnover rates and staff tenure was obtained from agency records. To determine class sizes, we asked administrators on the survey to report the average number of students in a classroom for grades K–3, 4–6, 7–8, and 9–12.

Nearly all information on BIA and DOD students' access to technology in schools, technology staffing levels, and how technology is used in the classroom was obtained through the survey. We calculated student-to-computer ratios systemwide for BIA and DOD schools by dividing the total number of computers reported by responding schools by the total number of students at the schools. For individual schools in the BIA and DOD systems, student-to-computer ratios varied somewhat from the ratio for the systems overall. With respect to technology spending, DODEA provided us with estimates of how much the agency spent to support

educational technology programs in its schools for the 1999–2000 school year. BIA schools provided this information to us through the survey.

## Facilities

### Condition

We gathered information on the condition of BIA and DOD school buildings primarily through the survey. We asked school administrators to report on the physical condition of buildings and on specific building features, such as roofs and plumbing. We also asked about whether certain environmental conditions were satisfactory, such as indoor air quality and acoustics or noise control, and whether working facilities for teachers and students, such as classrooms, libraries, and computer labs, were sufficient. Many of the questionnaire items were based on those used in two previous surveys: a 1999 Education survey on the condition of school buildings, which was conducted on a nationally representative sample of public schools;[2] and a 1994 GAO survey on the condition of school buildings, conducted on a nationally representative sample of public schools and all BIA schools.[3] We asked administrators to report separately on the condition of school buildings and on the condition of dormitory buildings.

### Backlogs of Maintenance and Repair Needs

As a further indication of the condition of schools, we reviewed BIA and DOD agency data on needed maintenance and repairs at school facilities. In reviewing BIA's backlog of deferred maintenance and repairs, we first excluded data for buildings not related to schools, such as administrative buildings, employee quarters, and buildings supporting law enforcement services. We then looked at estimated costs to address certain types of deficiencies according to categories used by BIA—for example, those related to student and staff safety; environmental needs, such as asbestos and radon testing; and energy-related needs. Finally, we asked BIA officials to conduct searches on the backlog database for deficiencies related to certain items asked about on our survey—for example, roofs; plumbing; fire safety; handicapped access requirements; sewer and water infrastructure; asbestos; heating, ventilation, and air conditioning; and playground surfaces and equipment—and then totaled the estimated costs

[2]National Center for Education Statistics (NCES), *Condition of America's Public School Facilities: 1999*, NCES 2000-32 (Washington, D.C.: U.S. Department of Education, June 2000).

[3]*School Facilities: Condition of America's Schools* (GAO/HEHS-95-61, Feb. 1995).

for these deficiencies. We also obtained the 5-Year Facilities Plan for DOD schools, which includes a total for the estimated amount needed to address all identified items. It should be noted that the 5-year plan does not include repair projects costing under $25,000 for domestic schools and $10,000 for overseas schools. We reviewed the 5-year plan data for specific building deficiencies that were noted more often as problems by DOD schools in our survey: roofs; heating, ventilation, and air conditioning; and playground surfaces and equipment.

## BIA's Allocations for Maintenance and Repairs of Schools as a Percentage of Replacement Value

To assess maintenance and repair funding levels for BIA schools, we measured funding against guidelines set by the National Research Council (NRC). The NRC has recommended that budget allocations for maintenance and repair be between 2 and 4 percent of current replacement value.[4] We first determined the current replacement value of BIA schools by multiplying the square footage of the schools by the cost to construct a new school per square foot. We obtained BIA's total education facility square footage for maintained buildings for 1997–2001. (These data included 14 peripheral dormitories and two colleges, which account for about 11 percent of BIA's total education facility square footage.) We then obtained data on the average cost per square foot of a new school for each year from 1997 through 2000, from annual education construction reports published by American School and Universities.[5] (The average cost per square foot of a new school was not yet available for 2001, so we used the average amount per square foot reported for 2000 for this year.) Then, for each year from 1997 to 2001, we multiplied BIA's educational facility square footage by the average cost per square foot to construct a school that year.

To identify BIA budget allocation categories that met the NRC's definition of maintenance and repair, we reviewed BIA documents describing the categories and discussed these with experts. Once we identified the appropriate categories, we obtained the amounts BIA requested and allocated for these categories for fiscal years 1997–2001. Then for each year, we determined the percentage that the requested and allocated

[4]NRC, *Committing to the Cost of Ownership: Maintenance and Repair of Public Buildings* (1990).

[5]J. Agron, *24th, 25th, 26th and 27th Annual Official Education Construction Reports*, (Overland Park, Kan.: American School and University, May 1998, May 1999, May 2000, and May 2001).

amounts represented of the current replacement value and compared these with NRC guidelines.

## Estimated Per Pupil Expenditures

To calculate estimated per pupil expenditures for DOD and BIA schools that would be comparable to public school figures, we followed guidelines for identifying expenditures set forth by the National Center for Education Statistics (NCES) in its National Public Financial Education Survey.[6] The results of this survey are used to develop the national per-pupil figure. National per-pupil expenditure figures reflect current expenditures from federal, state, local and private sources, at the district level for pre-kindergarten through grade 12. Current expenditures include salaries, benefits, purchased services, and supplies for the following functions: instruction; support services; noninstructional services, such as food services; and direct program support, such as state contributions to employee retirement funds. Long-term expenditures such as capital outlay, debt service, facilities acquisition and construction services, and property expenditures (for example, for equipment and vehicles) are excluded from current expenditures by NCES and, in most cases, by our evaluation. At the time we did our work, the latest school year for which national public school per-pupil expenditures were available was 1997–98.

Data needed to precisely compute per-pupil expenditures for both BIA and DOD schools were not available. Therefore, our calculations are estimates based on BIA and DOD agency data and federal expenditure information from tribal audit reports submitted under the Single Audit Act. Because BIA and DOD data were generally not available by categories specified by NCES, we used agency or tribal expenditure or obligation data for programs or budget line items which included these categories. Using this approach we were able to include expenditures for salaries, benefits, purchased services, and supplies for the categories included in the national per-pupil expenditure: instruction, support services, and noninstructional services. Direct program support generally did not apply. Similarly, we were generally able to exclude expenditures for capital outlay, debt service, and facilities acquisition and construction services by excluding budget line items that contain these expenditures. In some

[6]NCES, *The National Public Education Financial Survey Instruction Booklet, January 1999* (Washington, D.C.: U.S. Department of Education). Because 1997–98 was the latest year for which national public school per-pupil expenditures were available at the time we did our work, we used the guidelines dated January 1999, since these guidelines applied to the 12-month period beginning July 1, 1997, and ending June 30, 1998.

cases, we were not able to extract specific expenditures or obligations relating to property expenditures within selected programs; however, these amounts were likely to be relatively small.

For BIA schools, we developed estimated per-pupil calculations for (1) BIA-operated day schools, (2) tribally operated day schools, (3) day schools overall, and (4) boarding schools. For BIA-operated schools, we obtained expenditure information from the Department of the Interior's (Interior) financial system based on codes indicating programs that support kindergarten through grade 12. We were not able to identify expenditures for administrative services provided by Interior for BIA-operated schools, such as payroll and procurement. We used fiscal year 1998 data. A fiscal year reasonably approximates the period July 1, 1997, and ending June 30, 1998, used by NCES. For tribally operated schools, we relied primarily on federal expenditure information from audit reports submitted under the Single Audit Act. These reports were generally for the period July 1, 1997, through June 30, 1998. We were able to obtain expenditure information for 54 of the 98 schools that were tribally operated that year. We could not obtain expenditure information for the remaining 44 schools because, in some cases, the school expenditure information in the audit report was included with other expenditure information for tribal or other organizations and could not be readily extracted, or because related audit reports were not available.

For both BIA-operated and tribally operated schools, we considered expenditures from federal funding sources only, which, according to BIA officials, represent by far the greatest source of funding for BIA schools. This included expenditure data for Education programs, such as Title I; and the Department of Agriculture's (USDA) child nutrition programs, such as the National School Lunch and Breakfast programs. The per-pupil expenditure figures for public schools nationally consider funding from all sources. Most funding for public schools comes from state, intermediate, and local sources.

In order to determine overall estimated per-pupil expenditures for day and boarding schools, we weighted the calculated estimated per-pupil expenditures for BIA-operated and tribally operated schools of both types, according to the number of students attending each type of school. We used student enrollment figures from BIA internal reports for each school type.

In order to calculate DOD overseas and domestic estimated per-pupil expenditures, we used obligations from DOD internal financial reports for

fiscal year 1998 as a proxy for expenditures, since DOD does not maintain expenditure information in the detail necessary for this type of analysis. We also used fiscal year 1998 data since, similar to other federal agencies, DOD tracks obligations by fiscal year and not for other periods. For student enrollment figures, we relied on data from DOD internal reports for domestic and overseas schools. We also obtained information for the value of USDA's child nutrition programs, such as the National School Lunch and Breakfast programs, for fiscal year 1998, which we included in the estimated expenditure per pupil calculation.

# Appendix II: Comments from the Department of Defense

UNDER SECRETARY OF DEFENSE
4000 DEFENSE PENTAGON
WASHINGTON, D.C. 20301-4000

PERSONNEL AND READINESS

SEP 5 2001

Ms. Marnie Shaul
Director, Education, Workforce, and
Income Security Issues
U.S. General Accounting Office
Washington, D.C. 20548

Dear Ms. Shaul:

This is the Department of Defense (DoD) response to the General Accounting Office (GAO) draft report GAO-01-934, "BIA AND DOD SCHOOLS: Achievement and Other Characteristics Often Differ from Public Schools," dated July 30, 2001 (GAO Code 102002). The Department has reviewed and concurs with the subject draft report as written.

The Department would also like to express its appreciation to the GAO staff for their professionalism and assistance during this review.

Sincerely,

David S. C. Chu

# Appendix III: Comments from the Department of the Interior

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

SEP 6 2001

Ms. Marnie S. Shaul
Director, Education, Workforce
and Income Security Issues
U.S. General Accounting Office
Washington, D.C. 20548

Dear Ms. Shaul:

Thank you for the opportunity to respond to your draft report entitled, BIA and DoD Schools: Achievement and Other Characteristics Often Differ from Public Schools" (GAO-01-934).

Enclosure I contains technical corrections that need to be made to the report before being issued as a final report. Enclosure II contains the BIA comments on the contents of the report itself.

Mr. William Mehojah, Director, Office of Indian Education Programs, Bureau of Indian Affairs, is available to provide any additional information. He can be reached at (202) 208-6123.

Sincerely,

Assistant Secretary - Indian Affairs

Enclosures

ATTACHMENT II

Agency Comments

**BIA Schools**

1. Page 5- In fiscal year 2001, BIA received a total of $777.6 million to support the operations of its schools and address educational facility needs. Operations of Indian Programs and Construction. Footnote indicates two separate BIA appropriations: Operation of Indian Programs and Construction.

**Recommendation/comments:** That the actual amount of the increase be differentiated between the Operation of Indian Programs and Construction accounts, since OIEP does not administer Construction directly. The reader should be aware that the overall 30 percent increase reflects approximately a 25 percent increase in Construction and approximately a 25 percent increase funding for School Operations per se. The GAO report should add a conclusion (which is implied later in the report) that the increases are warranted based upon poor conditions in existing buildings due to age, and the below national averages allocated to maintenance over an extended number of years.

See comment 1.

2. Page 5 - The report states that BIA schools also receive significant funding from the Department of Education.

**Recommendation/comments:** The GAO report should acknowledge that the support from the Department of Education is the same as those available to all public schools across the country. The GAO does mention that public schools get these subsidies, but not until the very end (pg. 50) and only in passing. The separation might lead a cursory, uninformed reader to think these programs disproportionally help BIA schools. These same programs are also available to public schools and especially to those public schools educating Indian children on Indian reservations.

See comment 2.

Moreover, public schools that educate Indian children on or near Indian reservations receive funds from PL 874 Impact Aid funds, for Public Schools that serve military dependents. While BIA schools receive funding from the Department of Education, the GAO report should also identify what funding Public Schools receive during the same school year (both ED and DoD). A graphic illustration may provide the reader with the best visualization of the comparison.

Finally, the GAO report should state that the DOI's OIEP, serving as a State Education Agency (SEA) is authorized to receive flow through funds from the Department of Education for the Title programs, based on a set a side of approximately 1.5 per cent, based on a State Plan and a MOU. This is a minimal amount, considering the economic level of the minority student population to be served and the isolated geographical location of the 185 schools in the country. Almost 100% of the students enrolled in Bureau-funded schools are eligible for the Free and Reduced Meals (FARM) program.

See comment 3.

Now on p. 10.

**Characteristics of BIA and DoD Students and Their Families Differ**

3. Page 9 - Differences between school systems.

**Recommendation/Comments:** The GAO report could improve the understanding of the differences between DoD schools and BIA schools if a couple of examples were described. DoD has no schools with such low numbers of students or combinations of grades as are found in BIA schools. This complicates teacher training, and the instructional options a teacher has in providing education to the wide mix of abilities and needs. The pupil to teacher ratio may be low in some bureau schools to meet student needs a larger number of teachers needed as compared to public schools. This results in a larger share of a school's budget devoted to personnel. In some small schools 95 percent of the budget goes to teacher salaries. Examples of how this increases costs by providing some visualization of the results that flow from BIA schools inability to take advantage of economices of scales issues would help explain the per child education expenditure. Further, GAO describes the dismal conditions on some of the reservations in other parts of the report. By comparing the maintenance of DoD schools with BIA schools, the report could comment on how the physical conditions found in the schools can affect student outcomes and success (a known factor in student achievement supported by numerous studies).

See comment 4.

**The BIA School System**

**Academic Performance of Many BIA Students is Below That of Public School Students**

Now on p. 12.

4. Page 11 - Academic performance of BIA students.

**Recommendations/Comments:** Results on State standardized tests reflect lower BIA student achievement, but these scores may be culturally biased to an even greater degree than they are for other minorities (such as African Americans) who share a common language or heritage (such as Hispanic Americans) with majority European Americans. GAO acknowledges, in the body of the report, that the use of standardized tests may result in a poor measure of true student ability, but does not highlight this fact in the conclusions. In fact, due to vastly different cultural experiences, GAO should state that the standardized tests are even less reliable than they might be for other minorities who grow up in the mainstream urban American culture.

See comment 5.

We agree that the academic performance of many BIA Students on national standardized tests is below that of public school students compared to the national academic performance. GAO used national averages (and some state averages) to measure BIA students against. There is a known difference in achievement between urban, suburban, and rural students in all cultures (including the majority white culture). The vast majority of BIA students are rural students. BIA student achievement should be compared to public schools serving large numbers of American Indian students in rural areas rather than simply use state or national averages which mask the differences in performance between rural and urban environments. Scores are available from public sources that illustrate student achievement based upon economic conditions.

See comment 6.

See comment 7.

The Bureau's efforts to address the difference in student achievement based upon the economic conditions and family conditions should be noted. BIA has focused on early childhood programs such as FACE, and the Therapeutic Residential Model (TRM) are designed to begin to moderate the influences of the economic environment on student achievement. Although not all schools have FACE, currently 22 sites do have the program, with an additional 10 sites programmed to begin in School Year 2001-2002.

The GAO report should acknowledge that the Bureau has established long term goals that address BIA student academic performance. These are:

All children read independently by the third grade.
70 percent of the students are proficient/advanced in reading and math.
Individual student attendance rate at 90 percent or better.
Students demonstrate knowledge of their language and culture.
Increase enrollment, retention, placement and graduation rates for post-secondary students.

Now on p. 14.

5. Page 13 - Number of students pursuing post secondary schools.

See comments 8 & 9.

**Recommendations/Comments** - GAO uses numbers of students planning on attending post-secondary schools as a measure of student success. GAO compares BIA students to national averages for all students. This may be an inappropriate comparison. The economies in vicinity of reservations is underdeveloped. Most jobs, including those in the upper echelons of those communities, do not require post-secondary education. Rural economies do not a require post-secondary education to achieve success. It would be more appropriate to compare BIA students to students from other rural regions of the U.S. Students at BIA schools probably have even lower incentive than other rural areas because of lack of role models and lack of jobs (GAO did mention these last two points, but not in conjunction with measures of students success).

The SAT scores may be an inappropriate measure of success of BIA students. American culture emphasizes the fact that scores on the SAT equate to entry into better post-secondary schools and thus translate into improved opportunities for financial success. Scholarships are made available to students with the highest scores. It is viewed as a competitive event and parental reinforcement is provided to do well. Students in many public and private schools begin taking pre-SAT (P-SAT) tests as early as grade 7 in suburban communities. BIA students have not developed the same cultural emphasis on high SAT scores. This is the result of several factors:

A. less firm plans to actually attend such schools (since it has a relatively less impact on their later life as noted above)

B. expectation of attendance at Tribal colleges where SAT (or College Board) scores are immaterial to acceptance or scholarships. (BIA students generally expect to go to tribal colleges and are accepted to local tribal colleges if they graduate high school; generally, they are able to attend tuition free. Finally, these schools are primarily 2-year institutions that do not require SAT or College Board test scores for acceptance or placement)

C. less cultural emphasis on scores (not a community status symbol as it is in many suburban areas) - competition for grades in school and thus competition for scores on a test (even competition for financial success in later life) tends to be less important in Native cultures than in traditional European cultures.

D. few BIA students take preparatory classes to get them ready for SAT-like tests (such as those taught by Sylvan Learning Center and Kaplan Schools). Taking such preparatory courses are a common preparation procedure completed by suburban students. Studies have shown that these course do increase student scores; this is especially true on lower achieving students (such as those in BIA schools).

OIEP suggests that the GAO caveat their evaluation of BIA student success based on the above measures. GAO should qualify its conclusions and use measures that are more closely applicable to the rural economy and environment found in Native cultural areas. Finally, GAO should compare Bureau high school students with like public schools on Indian reservations.

**Teacher Staffing at BIA Schools is Comparable to That of Public Schools Despite Some Recruiting Difficulties**

Now on pp. 17-18.

6. Page 14 - Teacher turn over.

See comment 10.

**Recommendation/Comments:** Teacher turn over could have an impact on student achievement. Studies have shown that teachers become more proficient over time. High rates of teacher (and student) turnover correlate with reduced student achievement in many school districts (public schools as well as BIA schools).

**Access to Computers and the Internet Reported by BIA Schools is Greater Than Public Schools, but Technology Support is More Limited**

Now on p. 19

7. Page 17 - Access to Computers.

**Recommendation/Comments:**

**1. OIEP Network:** On August 23rd, 2001 the last BIA School, Jones Ranch, was connected to the Internet. The Internet connectivity project has spanned 4 years and has encompassed 185 schools, 14 community colleges, and 2 universities. This network represents the third largest network within the Department of the Interior and is over twice the size of the traditional BIA administrative network. In comparison with large sized school districts, this however, is the norm. The major difference with public school districts is that the BIA's Educational Native American Network - 2 (ENAN-2), supports schools in 23 states as its district area, from Maine and Florida to schools in California, Oregon, and Washington.

**1.1. Network Condition:** While all schools have a base level of connectivity to the Internet,

approximately 25 percent of these sites are operating on marginal, 56 to 128 Kbps, bandwidth. This only permits limited usage of the Internet as a research tool for these sites. With the explosion of distance learning programs and the added network requirements for DOI administrative systems, eGov, and the pending SSI ASP project, these circuits as well as many others will need to be upgraded considerably over the next 12-18 months. The OIEP has already seen numerous requests to increase bandwidth, even at the smallest schools. It is expected that this trend will continue.

Recent efforts in redesign of the network are underway to start the process of providing better network performance. The ENAN-2 has separated from the BIA/DOINET and is currently utilizing a stub area configuration with hubs located in Albuquerque, Phoenix and Sioux Falls. Approximately 62 sites are utilizing satellite technology to access the Internet and DOI/BIA administrative systems.

Redesign Projects underway in FY2001/2002 include: Replacement of the Oldest Routers (45 Units), Installation of Internet Filtering Devices (110), re-provisioning of the network to the FTS2001 platform including bandwidth enhancements, and the installation of state-of-the-art network monitoring systems.

See comment 11.

**2. OIEP Computers:** During FY2000, a Census was taken of the number and condition of Personal Computers at each BIA school. This number exceeded 15,000 units. From the surface base numbers, this equates to 1 computer per 3.3 Students. This however can be misleading. Approximately 30 percent of these systems are for Administrative usage. Of the remainder, it is projected that almost half of these units either are reaching or have surpassed their life cycle usefulness.

**2.1 Computer Condition:** As previously stated, approximately half of the non-administrative computer systems in use at the schools today are severely outdated and cannot perform adequately. With each passing fiscal year, the schools try to acquire new equipment but this effort is marginal and cannot keep in step with changes in technology and new application requirements. The end result is a marginal base of computer systems that can provide limited usefulness in both educational and research environments.

**2.2. Computer Summary:** GAO is correct that technology support for the OIEP schools is limited. OIEP requires additional resources. The Bureau's school system needs an OIEP/Education-Centric multi-year Indefinite Delivery / Indefinite Quantity (IDIQ) Information Technology Contract that can leverage economies of scale in purchasing while ensuring that those items on the IDIQ adhere to the IT standards as outlined by the BIA's Chief Information Officer. OIEP additionally requires the implementation of a OIEP-Centric help desk system. OIEP has been utilizing the BIA's OIRM help desk in addressing end-user's problems but this has proven to be inadequate due to the needs of the schools and number of end users.

See comment 12.

**3. Overall Summary:** The OIEP indeed has 1.) Provided Network Access to all Schools, 2.) Has a ratio of approximately 1 Computer per 5 students as outlined by the GAO report. What the report fails to address is the fact that many state legislatures have appropriated funds specifically for school technology programs which are not included in schools' district funding appropriations (and so are

not part of per pupil expenditures under NCES). See the report published by *Education Week* magazine entitled "Technology Counts 99". The lack of comparable resources complicates the difficulties impressed upon the OIEP in providing these services to each of the schools. The OIEP had to depend on private partnerships and grants to provide enough resources to provide these technical capabilities to all the schools. As stated above, this network and its various components constitute the 3rd largest network within the Department of the Interior and is twice the size of the more commonly known, BIA Administrative network. The OIEP requires additional resources which would focus on IT support for its national school system. From the report it is unclear what the DoD's system provides to support its schools.

**BIA Reports Needing More Than $960 Million To Address Educational Facilities Deficiencies but Funding Has Been Increasing**

Now on p. 28.

8. Page 27 - School Facilities

**Recommendation/Comments:** The GAO indicates that upkeep of apartments for staff is meant to be covered by the rents charged to that staff. GAO does not point out that the DoD does not charge teacher staff rent in overseas schools. Staff in DoD schools live in government quarters expense free in the overseas schools. The GAO "assumed" that BIA apartments were not further subsidized out of the school maintenance budget and construction budget. BIA schools do subsidize these apartments. This is necessary to maintain a qualified teaching staff. Thus, funds that would otherwise be used to maintain schools and build new facilities is diverted to subsidize apartments for staff. Increasing staff rents would adversely affect teacher recruitment and retention. Housing for teachers is not part of this calculation of "costs per student" per NCES. This GAO assumption (that rents covered all expenses) fails to recognize that maintenance dollars for schools are diverted to apartments; this essentially increases the funds attributed to school maintenance (a part of "cost for instruction" based upon NCES). Since school maintenance is part of "cost of instruction"the GAO assumption improperly increases the perceived "cost per student"since maintenance of Teacher apartments should not be a part of school maintenance. Furthermore, in the case of DoD schools, the free housing for teachers masks the disparity in per pupil expense when compared directly with BIA schools where maintenance of apartments may be included in the school facilities maintenance budget.

See comment 13.

**BIA Funding for Maintenance and Repair is Less Than National Guidelines**

Now on p. 31.

9. Page 27 - Maintenance of BIA schools.

**Recommendation/Comments:** The GAO report is significant in that it illustrates with factual justification and examples, the differences between the three types of educational systems. These differences have a direct impact and refute the simplistic attempts to compare these schools on a strict dollar expenditure per pupil or by program comparison.

The report focuses on the facilities building and infrastructure repair and replacement needs in the context of deferred construction maintenance budget requirements. This is readily evident in the narrative from page 26 – 28 as this pertains to the BIA schools.

The most glaring omission is any specific reference to the fact that schools and other buildings require adequate "operations" funding. The current plans and funding for replacement of schools does not provide for some projects to add significantly more facilities space to accommodate expected increased student enrollments or expanded educational program requirements. The total facilities program is presently under funded for "operations" expenses. These expenses are fixed costs that must be paid in order to keep the buildings open and occupied. With increased fuel and utility costs it is vitally critical that this under funding issue be addressed.

See comment 14.

The facilities "operations" cost can also be reduced if the replacement facilities construction projects included the cost of demolition and removal of old structures, rather than to have these structures sit idle and create a liability for minimal sustained security until a decision is made on the disposal of these structures.

See comment 15.

Funds identified for "maintenance" are budgeted and programmatically defined and expenditures are accounted for differently among BIA, DoD, and public schools. This fact makes a accurate straight across the board comparison difficult if not impossible task within the time frame of the GAO investigation. The BIA budgets and accounts for appropriated funding use a segregated format. The segregated methodology separates "maintenance" from "operations. The DoD system budgets and accounts for expenditures combining both programs and their costs. Additionally, there is a distinct difference in the budgeted and expenditure accounting methodology regarding the dollar threshold used by the two entities. In BIA the maintenance program is separated into costs for day to day work requirements, staffing, material and other related cost, however this maintenance program does not include "deferred construction maintenance". The DoD system has adopted a much higher threshold for "operations" as they incorporate many "deferred construction maintenance" costs into their "operations" budget.

See comment 16.

The BIA Office of Indian Education programs has contracted with a nationally recognized firm, Applied Management Engineering, to investigate, analyze and report on the budgetary and programmatic differences between BIA, DoD and public school facilities operations and maintenance program systems. The comparison report findings and recommendations will be used to strengthen and improve the Bureau of Indian Affairs facilities operations and maintenance programs.

**Estimated Expenditures Per Pupil for BIA Schools Are Higher Than Public Schools, and Vary Substantially Between Categories of Schools**

Now on p. 32.

10. Page 29 - Per pupil expenditures.

**Recommendation/Comments:** The per pupil expenditures (PPE) are a basic measure of the amount of money invested in each child's education. Based on the review, the analysis was done

on a formula of aggregate expenditures (A) and divided by number of students (S). [A/S=PPE, with expenditure/obligations as proxy for aggregate expenditures, if data was not otherwise available.]

The estimated per pupil expenditure was calculated to be **$9,647**. Since the Bureau school system receives funding from several line item funding sources, it is important to examine several expenditures measures in a disaggregated manner such as: student transportation, administrative cost grants, and facilities maintenance and operation. The calculation of expenditures per pupil is presented based on Average Daily Membership (ADM) which generally reflects attendance rates. Total Expenditures source per ADM are calculated by dividing total expenditures by the total number of students enrolled in the Bureau school system. It should be noted that expenditures per ADM reflect the aggregate and are not adjusted costs reflecting differences between the common day school student, students in residential schools, students with special educational needs, or the costs of small schools in sparsely populated areas.

See comment 17.

This method of calculating per student costs masks the significant differences in environment and student needs that the GAO acknowledges elsewhere in the report. The simplistic use of the total funding information divided by total students mischaracterizes the real conclusions in the GAO report that this funding level is not excessive. Another way of representing cost per student that acknowledges the differences in student need and differences in conditions is to use weighted students units. This measure acknowledges the differences in needs of the students. This method of allocating funding is accepted in the educational community. Florida and the State of Washington use a similar method of calculating need and adjusting funding based on that need. All other school districts establish "special programs" in schools with special needs which reflects a similar calculation, just a different method of allocating the resources.

The WSU count for the BIA-funded schools was **88,705** excluding the dorms. This compares with the average daily membership of ADM for SY 1997-98 of **48,505** students and represents an 83 percent difference. The difference between the ADM and WSU counts is striking and reflects the fact that the cost of educating the 48,505 students attending BIA-funded schools, many of whom attend residential programs, is equivalent to educating 88,705 "typical" students. The GAO report acknowledges, in the body of the report, that the needs of BIA students are significantly greater than what is found in typical school systems. The conclusion regarding "cost per student" does not highlight this difference in need. The cost of educating Indian students in Bureau schools should have been compared to public school on Indian reservations with similar student populations, such as Shannon County and Todd County school districts in South Dakota, or McKinley county in New Mexico.

See comment 18.

See comment 17.

It is recommended that the GAO use an alternative method of calculating cost per student that somehow reflects the differences in student and school needs. Some examples are outlined below:

The State of Florida recognizes that some schools, some districts, and some students require additional funding to provide necessary services/instruction to students that is beyond the average base amount. Florida allocates funding to the schools which have greater needs which increases the "per student cost" for those schools. Florida uses the average middle school student as the base, and allocates additional funding for elementary schools and high schools on a "per student" basis based

upon data which shows that it takes more resources to educate students in the early grades and in high school. Florida also allocates additional funding for students at all grade levels based upon whether students are English as a Second Language (ESOL is a 1.27 multiplier), vocational education (1.21 multiplier), or in special education (1.3-5.9 multiplier based upon the standard coding level 1-5). Florida also adjusts funding based upon whether the school is in a sparsely populated area, has declining enrollment, or provides additional after school or summer programs for disadvantaged students. This program has been in effect since 1975.

BIA modeled its program after the Florida program. It provides additional funding to schools based upon school and student need. Schools receive additional funds which raises the "per student cost" at these schools. Since, as GAO recognizes that, on average, Indian students have a much higher than average need (especially for ESOL, Special Education, and remote/sparsely populated areas), it is only reasonable that the cost per student be higher than at the average public school across the nation. The Weighted Student Units (WSU) used by BIA and comparable to the Florida program above, represents the true student needs.

GAO also recognizes that BIA provides some dormitories and boarding schools for students. These provide 24 hour care (counselors and advisors), meals, and housing in addition to education programs. The Department of State employees who are stationed in remote locations without adequate schools (that is in most areas of the world except Western Europe), are permitted to put their school-aged children in dormitory schools/boarding schools in the U.S. or other areas in Europe. The average cost for a State Department student in a dormitory/boarding school is $26,000 per year. This cost is increased by providing two round trip plane tickets per year per student for visits home. Based on the Dept. of State expense model, and the Florida model, BIA level of student funding is very much in line and should be characterized as appropriate based on student needs.

Using the calculated WSU model, the actual base expense per student is $5,275. This is well below the DoD cost per student, and is below a majority of schools nationwide. The budgetary expense of $467,927,735 divided by the 48,505 students equals $9,647. Conversely $467,927,735 divided by 88,705 WSU equates to $5,275 per pupil expenditures. This second model of calculating "per student cost" better reflects the actual student need that GAO identified, but did not use in its analysis.

See comment 19.

Now on p. 33.

The budgetary expense related above of $467,927,735 includes funds for the administrative cost grants. These grants are provided to Tribal Grant/Contract Schools for the purpose of administering the schools and providing funding for related administrative overhead services and operations necessary to meet the requirements of law, to exercise prudent management practices and to carry out other necessary support functions that are not part of the basic academic instruction. The report indicates on **page 29,** "BIA provides administrative cost grants to tribally operated schools, which averaged about **$1,400** per student in 1997-98." These funds are used to support the Tribal Government in making decisions regarding administering schools, and are not used for providing instruction. The 1992 PL 93-638 (Self-Determination) provides for turning administration of Indian activities over to the Indian nations. BIA/OIEP has facilitated such a program and this program is continuing. However, OIEP recommends the Administrative Cost Grants (ACG) should not be included in the estimating the PPE by GAO. Administrative Cost Grants (ACG) and Residential

Costs (not part of public schools)) should not be included in determining PPE. If these costs are not considered, the Per Pupil Expenditure is approximately **$8,000** (even without adjusting for student needs. Using a WSU model, this would make actual instructional support PPE approximately $4,500) which is close (and possibly below) the DoD PPE ($7,725).

## GAO Comments

1. We stated that BIA's funding for school operations and facilities needs increased 30 percent from fiscal years 2000 to 2001. Interior suggested that GAO differentiate the actual amount of the increase between the Operation of Indian Programs and Construction appropriation accounts, initially stating that each account had increased by 25 percent. Based on our calculations, we added information to the report specifying that funding for Operation of Indian Programs increased by about 5 percent and funding for Construction increased 121 percent between fiscal years 2000 and 2001. This supports our statement that nearly all the increase was for the repair and replacement of school facilities while funding for school operations received only a modest increase.

2. Interior commented that our report should acknowledge that the Department of Education (Education) funding that BIA schools receive is available to all public schools across the country. Interior specifically noted that public schools that educate Indian children on or near Indian reservations receive Impact Aid Funds from Education. We added text to the report indicating that like BIA schools, many public schools also receive funding from Education.

3. Interior noted that in an agreement with Education, BIA serves as a state education agency and is authorized to receive flow through funds from Education. We have added this information in the report.

4. Interior suggested that we provide some examples to further highlight differences between BIA and DOD schools. Interior stated that the DOD school system has no schools with small enrollments or combinations of grades like those in the BIA school system. The DOD school system does have several schools with enrollments under 100 students and schools that span both elementary and secondary grades, but we agree that these types of schools are less prevalent in DOD's school system. Interior also said that it would have been helpful for GAO to provide an example of how BIA schools are less able to take advantage of economies of scale and that this would help explain the school system's per- pupil expenditure. In our report section on per pupil expenditures, we describe a situation that illustrates how difficult it can be for BIA schools to achieve economies of scale. Finally, Interior stated that the report could comment on how the physical conditions found in BIA schools could affect student outcomes. Thus, we added a note to the report stating that though some studies conclude that school facility conditions—such as

inadequate ventilation or faulty heating systems—can affect student learning, the research is inconclusive overall.

5. Regarding the performance of BIA students on state assessments, Interior argued that state standardized tests may be culturally biased and may be a less reliable measure for Indian students than other minorities. In the report we acknowledged that standardized tests have been criticized as being culturally biased, and we therefore provided information on authentic assessments of BIA students. However, we are not aware of any research that shows standardized tests are less reliable for Indian students than other minority students.

6. Interior said GAO should have compared BIA student achievement with public schools serving large numbers of Indian students in rural areas. We agree that these would be worthwhile analyses. However, the additional audit work and data required to perform these analyses did not allow us to include them in this report.

7. Interior noted BIA's efforts to address differences in student achievement through programs designed to moderate the effects of poor economic and family conditions on student achievement. The agency also noted that BIA had established long term goals that address student performance. We have added information to the report to acknowledge BIA's efforts in these areas.

8. Interior questioned our comparison of BIA students' plans to attend college and performance on college entrance examinations with those of students nationally. The agency argued that the economies of rural areas, where most BIA schools are located, do not offer jobs that require post-secondary education, and for this and other reasons, less cultural emphasis is placed on BIA students to perform well on tests like the SAT and to attend college. The agency stated that BIA students generally expect to go to tribal colleges that do not require college entrance examinations, such as the SAT. We believe that these measures are appropriate given that one of the Office of Indian Education Program's goals is to increase post-secondary enrollment rates. Also, a significant number of BIA students take the SAT and ACT, perhaps to enter colleges that require these examinations.

9. Interior also said that we should have compared BIA students' plans to attend college and their performance on college entrance examinations with students from other rural regions of the U.S. or students in public schools on Indian reservations. Some data are

available for students living in rural areas but these are not specifically focused on Indian students. For example, data from 1993-94 show that on average 54 percent of 12th graders living in small towns or rural areas applied to college, compared with BIA school administrators' estimates that 28 percent of graduating seniors planned to enroll in college. With regard to the SAT, for students graduating in 2000, rural students received an average total score of 992 on the verbal and math sections of the SAT, compared with 1,019 for students nationally, and 765 for BIA students.

10. Interior stated that teacher turnover correlates with reduced student achievement, but did not provide support for this statement. We were not able to identify any studies establishing a link between teacher turnover and student achievement.

11. Interior noted that in fiscal year 2000, BIA conducted a census of personal computers in BIA schools and concluded that the school system had a ratio of 1 computer for every 3.3 students. BIA added, however, that 30 percent of these computers are for administrative usage and that almost half are reaching or have surpassed their life cycle usefulness. Our survey asked school administrators about computers used specifically for instructional purposes. Using these data, we determined that the school system had a ratio of 1 computer for instructional purposes for every 3.5 students.

12. Interior said that we had failed to address the fact that state legislatures have appropriated funds for school technology and that these funds are not included in district funding appropriations and therefore are not included in calculations of expenditures per pupil by NCES. We contacted NCES and were told that state funding for educational technology should be included in the data that states report to NCES for expenditure per pupil calculations. Thus, based on this information, we did not modify our report. Interior also noted that the Office of Indian Education Programs had to rely on private partnerships and grants to provide enough resources to place technical capabilities in all its schools. (It should be noted that these additional resources were not identified during our review and therefore were not included in our expenditure per pupil calculation for BIA schools.) In addition, Interior stated that our report was unclear about the resources DOD uses to support technology in its schools. In our report we provided an estimate for the amount of money the DOD school systems obligated per student for educational technology in fiscal year 2000, which was less than the amount BIA schools spent per student

based on our survey results. This funding comes from DOD appropriations.

13. With respect to housing for teachers and staff, Interior said that we had assumed that rents collected from teachers living in employee housing covered the cost of maintaining this housing and had not realized that schools end up covering these costs out of their facilities maintenance funds. Interior argued that school maintenance funding diverted for teacher housing should not have been included in our calculation of expenditures per pupil. Interior also stated that staff in DOD schools live in government provided quarters expense free. Early in our review, BIA officials informed us that rents paid by teachers and staff did not cover the full cost of maintaining employee housing. However, when requested, BIA was unable to identify expenditures made by schools for such purposes. More importantly, Interior noted in its comments that providing housing is necessary for maintaining a qualified teaching staff. Because of this, we believe that expenditures to maintain employee housing are part of the cost of providing instruction for these schools. An NCES official agreed and stated that expenditures from school facilities maintenance funds used to maintain employee housing should be included in the calculation of expenditures per pupil. For the same reason, we included DOD schools' expenditures for housing allowances provided to overseas staff in our calculation of expenditures per pupil. We have also added a footnote stating that a small number of staff in DOD schools overseas live in government-provided quarters; most receive housing allowances intended to cover the cost of housing in the areas where they choose to live.

14. Interior commented that our report failed to address the adequacy of funding for facilities operations. We were not able to identify a widely used benchmark to assess the sufficiency of BIA's facilities operations funding. We were only able to compare BIA's obligations for both facilities operations and maintenance with similar expenditures for public schools. We found that BIA's obligations per square foot of building space were higher than the national median for public schools. However, it was difficult to draw conclusions from these calculations as they do not consider the additional infrastructure BIA schools operate and maintain. Also, this analysis does not examine the adequacy of BIA's funding for operations and maintenance, it merely compares the amounts used by BIA and public schools for these purposes. Further, we were aware at the time we conducted our work that BIA had contracted with a private engineering firm to assess the

adequacy of BIA's facilities operations and maintenance funding. This work may provide a clearer picture of BIA's needs. This report is expected to be completed in Fall 2001.

15. Interior commented that the cost of operating facilities could be reduced if school replacement construction funding covered the cost of demolishing and removing old structures. Currently, BIA provides for the security of these idle structures out of operations funding until a decision is made on their disposal. This issue may be worthy of attention, but BIA's own budget formula for determining operations and maintenance needs suggests that this is not a major expense.

16. Interior noted that BIA, DOD, and public schools define and account for maintenance funds and expenditures differently, and these differences make "a straight across the board comparison" difficult. We determined that it would be challenging to complete such an analysis within the timeframe of this review. Thus, we did not attempt to compare maintenance budgets or expenditures among these school systems. Rather, we analyzed BIA's and DOD's maintenance and repair backlogs and provided information on the amount of funding allocated to address them and school construction.

17. Interior commented that our estimates of expenditures per pupil were not adjusted to reflect differences between students in day schools and in residential schools. We did calculate separate per-pupil expenditures for day schools and residential schools and did not combine them. Interior also stated that we did not adjust our per-pupil expenditure estimates for students with special education needs or for the costs of small schools in sparsely populated areas. The agency recommended that we use an alternative approach for calculating expenditures per pupil that takes into account differences in student and school needs. Interior pointed to funding allocation systems used by some states where students are weighted differently based on the additional education resources they may require. For example, a student requiring special education services may be counted as 1.5 students in determining state aid. Interior argued that we should have used a weighted count of its students to calculate expenditures per pupil, since a high proportion have special needs. Such a calculation may be useful, but comparisons with public schools would not be possible since NCES does not calculate the national expenditure per pupil using a weighted student count.

18. Interior stated that we should have compared BIA expenditures per pupil with that of school districts with similar student populations. Interior suggested several school districts with similar student populations in South Dakota and New Mexico that could be used for comparison with BIA's per-pupil expenditure. We obtained the per-pupil expenditures for these districts from NCES and found they ranged from $4,979 to $8,706 in 1997-98, all below BIA's estimated expenditure per pupil of $9,647.

19. Interior recommended that we should not have included administrative cost grants for tribally operated schools in our expenditure per pupil calculation. The agency argued that these grants are for the purpose of administering the schools and carrying out support functions that are not part of the basic academic instruction, such as fiscal and personnel activities. According to an NCES official, these expenditures should be included as they fall into the category of general administration expenditures, which is included in the national per pupil expenditure calculation.

# Appendix IV: GAO Contacts and Staff Acknowledgments

## GAO Contacts

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